RUTGERS
School of Arts and Sciences

2016-17 SAS Annual Assessment Report

Executive Summary

The School of Arts and Sciences 2016-17 assessment record demonstrates the School'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.

All of the 42 SAS departments and undergraduate programs[1] have learning goals posted online and aligned with University and School goals, and all are actively engaged with regular direct assessment of student learning outcomes, or are working together as a faculty to develop and implement such plans.

All **42** programs filed annual assessment reports for 2016-17. These were reviewed by the SAS Office of Undergraduate Education and will be audited by the faculty-based SAS Assessment Committee in the fall.

On the key criteria of developing effective, efficient, and sustainable assessment plans, two-thirds **(28/42)** of the departments are using 'best practices' or are making 'very good' progress. Almost all departments **(39/42)** have developed direct assessment tools. The department reports indicate a commitment of the faculty to improving student learning. **Forty of the forty-two** departments included descriptions of curricular and/or assessment improvements they have made, or will make, to improve student learning outcomes or to improve the measurement of those outcomes. **Three** departments reported that their faculty have decided to update program learning goals in response to assessment results.

In a handful of departments **(6/42)**, however, the rate of progress clearly has slowed compared to past years. The SAS Assessment Committee will review the reports for these departments in Fall 2017 and discuss ways to encourage them to reinvigorate their assessment efforts.

This year's reporting form asked departments what additional resources or services would help facilitate the assessment process. Several departments made requests for better data and technological tools to evaluate student experience in their programs. Other departments requested more professional development opportunities for instructors and more administrative support for assessment efforts. The SAS Office of Undergraduate Education plans to work with the SAS Dean's Office and other units on campus to provide these resources and services.

In sum, across SAS, assessment is being successfully used as a tool to maintain excellence in undergraduate education.

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

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The critical undergraduate education mission of the School of Arts and Sciences to achieve excellence, create opportunity, and build leadership by providing a high-quality, nationally recognized, liberal arts and sciences education to a highly diverse student population.[2] In addition to the Core Curriculum goals,[3] 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.

The SAS Assessment Committee, along with the SAS Office of Undergraduate Education, oversees department-based assessment of disciplinary learning goals and advanced achievement of Core learning goals through the major.[4] Throughout the year, the SAS Office of Undergraduate Education assists departments in designing, implementing, interpreting, and improving their assessment efforts. Departments submit annual assessment reports by June 15th, using a reporting form (Appendix A) 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).

In AY 2014-15, the reporting form included an additional question on the most significant challenges faced in developing and implementing an assessment plan. In AY 2015-16, the reporting form was further modified to request information on other course/curricula evaluations or reforms in which faculty are engaged, and to ask departments whether there were specific types of resources or services that would facilitate their assessment efforts.

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[2] Excellence, Opportunity and Leadership: Strategic Plan for the Rutgers University School of Arts and Sciences, 2016-2020. http://sas.rutgers.edu/documents/office-of-the-dean/office-of-communications/859-srategic-plan-for-the-school-of-arts-and-sciences-2016-2020.

[3] 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.

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The annual departmental reports are reviewed in the Office of Undergraduate Education 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 Associate Dean for Undergraduate Education prepares drafts of individual reviews of each department's assessment, focusing on making 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 actively engaged in regular direct assessment of student learning outcomes, or are working together as a faculty to develop and implement such plans. The SAS Assessment Committee does mid-year follow-ups with departments that appear to be stalled or making little progress in their assessment efforts.

The University's Assessment Checklist for Academic Programs provides the basis for review of department reports. For all department reports, the Associate Dean does a preliminary scoring of each checklist item along a scale from "best practices" to "progress slow or stalled."

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

In previous assessment cycles, programs were assigned overall evaluations that mapped directly into the scoring system. In Fall 2015, the SAS Assessment Committee decided to simplify the summative classification of program assessment efforts into three categories: "best practices," "making reasonable progress," and "progress slowed or stalled." This simplification was motivated by a desire to provide more straightforward and useful feedback to departments. In particular, the Committee's sense was that the distinctions in the rate of progress in the summative evaluation served to muddy the waters; for most departments, progress was uneven across the different measures. The Committee wanted to encourage departments to focus less on their overall "grade" and more on the feedback provided on the specific elements of their assessment plans and activities.

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2016-17 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 reporting programs plus the Writing Program (which is included in the Core Curriculum Report) account for 94% of the total enrollment in SAS courses for 2016-17 (202,144 out of 215,052).[5] Appendix B presents data on enrollments and numbers of majors and minors in the Class of 2017 for each of the 42 SAS departments.

A few departments filed their assessment reports well past the June 15th deadline. In some cases, the delay was due to having a new undergraduate director who had not previously been engaged in the department's assessment efforts. In others, it was caused by the travel plans or illness of the undergraduate director in May or June. In all cases, a contributing factor was the responsibility for assessment being borne solely by the undergraduate director. The experiences of these departments highlight the need for program assessments to be carried out by a committee of faculty, not just the undergraduate director. The SAS Office of Undergraduate Education will be working with these departments to help them establish structures for program assessment that provide for continuity through departmental leadership changes and extend the responsibility for assessment to a broader group of faculty.

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 "best practices" to "progress slow or stalled." Chart 1 (p. 8) presents the SAS average score for all those departments scored on the item and Chart 2 (p. 9) 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.**

[5] The Writing Program registered 17,073 students in 2016-17 and its excellent assessment program feeds into the Core Curriculum report. The remaining 12,908 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. One department filing a report, Marine and Coastal Sciences, is joint between SAS and SEBS. The 443 enrollments in the SEBS course numbers offered by this department are not included in the enrollment data provided above.

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

All SAS departments and programs have developed and published programmatic learning goals available on SAS and department web pages and in the official catalog. All department learning goals align with both university and Core learning goals and meet the SAS goal of rigorous disciplinary learning goals in major and minor fields of study (or a single credit-intensive major field of study).

2.8 36/42 2.6 33/42	**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 made available to students. 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.

2.6 32/42	**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
2.5 28/42	✓ Effective
2.5 28/42	✓ Sustainable
3.0 42/42	✓ **Reviewed annually**

SAS departments continue to progress in developing strong assessment plans, structures, and processes. (For previous years' results compared to 2016-17, 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 2.5 to 2.6, and two-thirds **(28)** of the departments scored 3 on all four measures. Only **6** reporting SAS departments scored below 2 on any of the four criteria in this category.

	Assessment Tools/Measures
2.9 39/42	✓ Includes some direct measures
2.6 29/42	✓ Tools/measures appropriate to goals
2.6 29/42	✓ Designed to produce reliable results that can be used for program improvement

SAS departments have done well in in developing direct, appropriate, and reliable assessment tools and measures. SAS averages ranged from 2.6 to 2.9; **25** of SAS departments/programs scored 3 ('best practices') on all three of these criteria.

2.5 28/42 2.4 26/42	**Benchmarks/Standards** ✓ Describes the process used define standards, targets, and relevant peer and historical comparisons ✓ 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. More than half (**24/42**) of all SAS departments/ programs scored 3 ('best practices') on both of these criteria in AY 2016-17.

2.7 35/42	**Assessment Implementation and Results** ✓ 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 **35** of the departments scored ≥2.5 on the conducting and reporting of direct assessments. **Nine** SAS departments also conducted at least one optional indirect assessment of student learning.

2.5 25/42 2.6 26/40	**Response to Assessment Results: "Closing the Loop" activities** ✓ Describes the process used to review assessment information and use for improvement ✓ Modification/refinement of pedagogy, curriculum, assessment tool, or learning goal based on assessment results.

Forty 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. The two departments that did not include such plans had undertaken substantial curricular reforms in AY 2015-16. Over half (**26**) 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-making across SAS programs.

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Chart 1: Average of SAS Department Scores, 2016-17

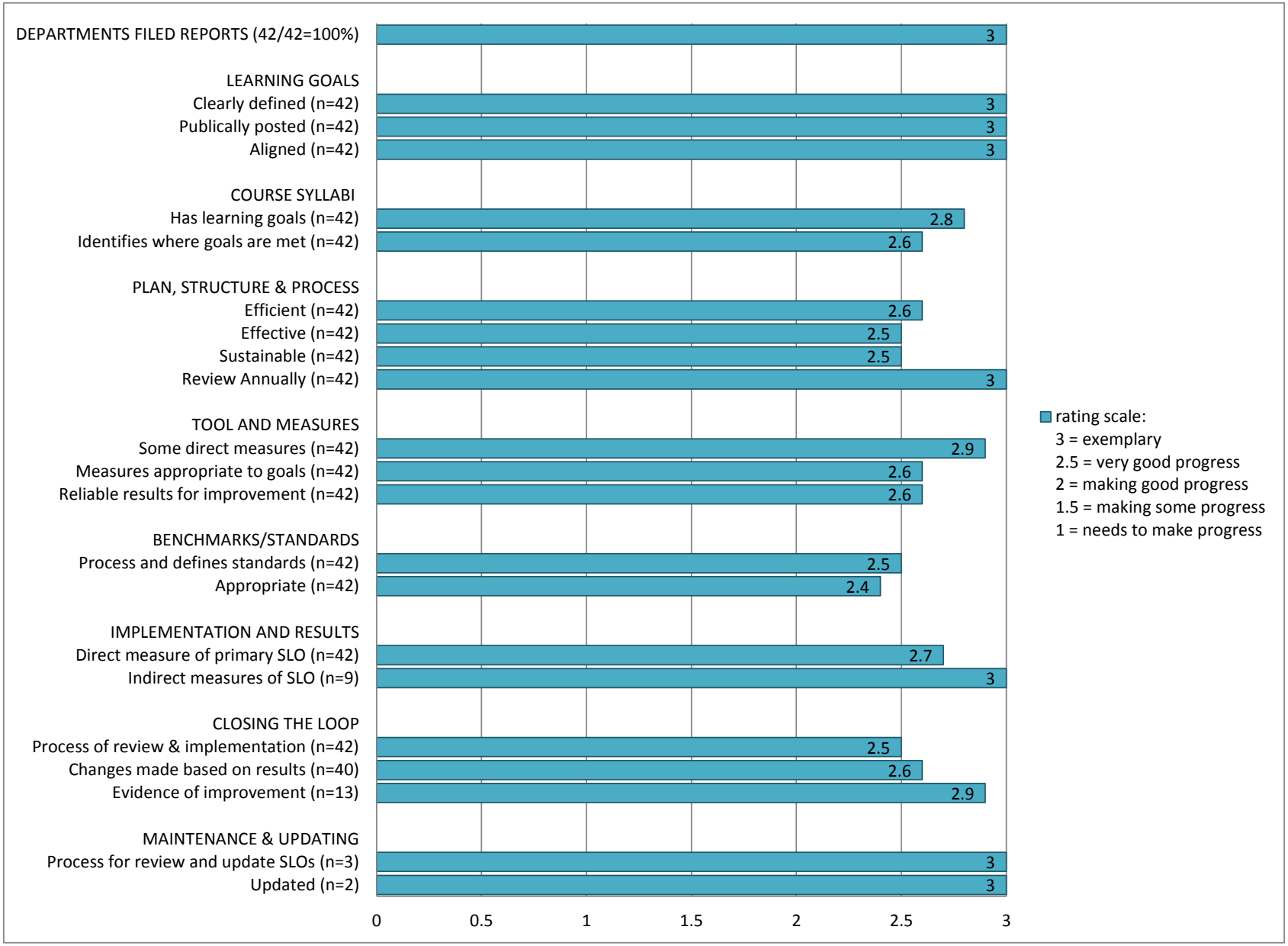

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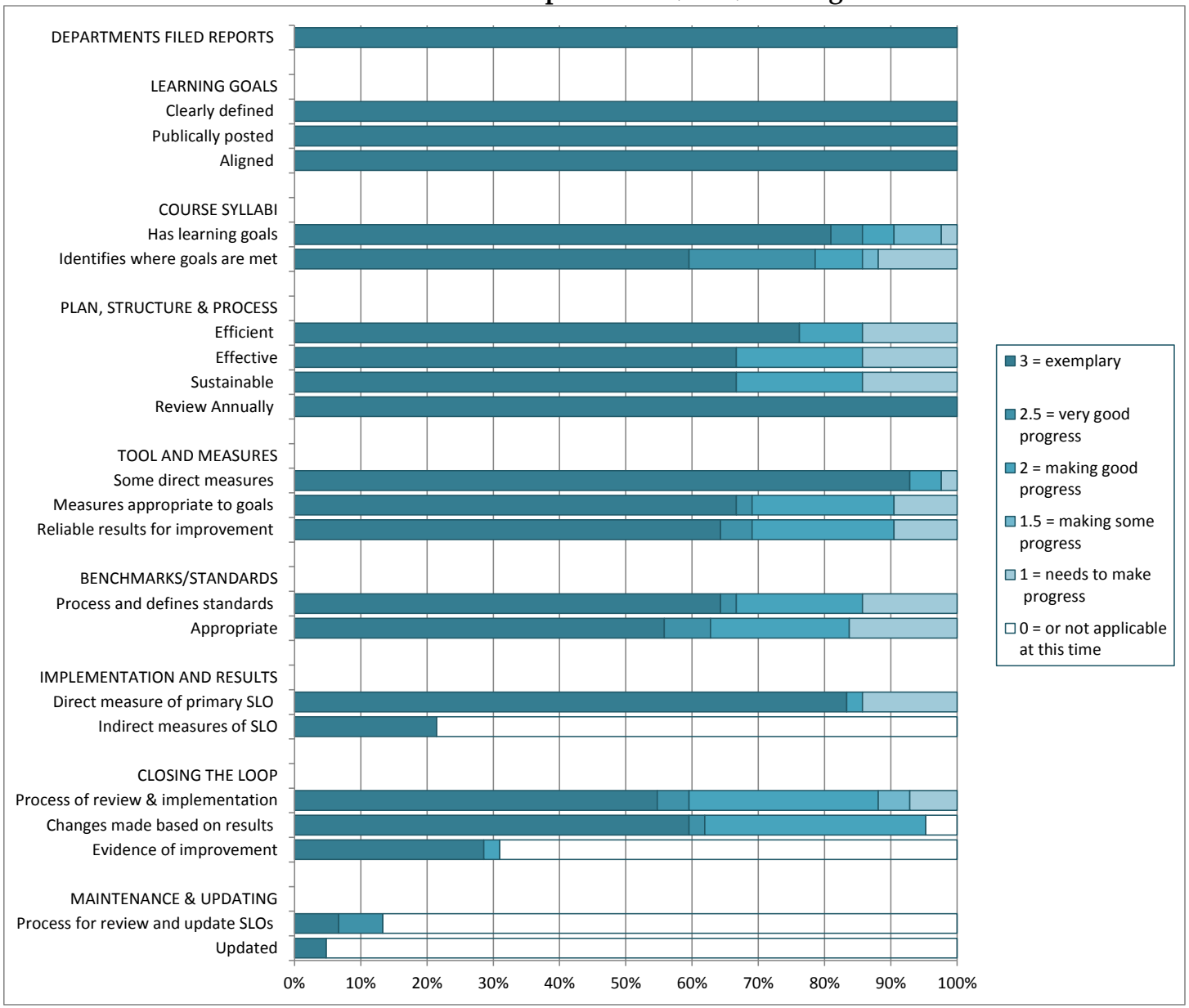
Chart 2: Percent of SAS Departments (n=42) Scoring at Each Level on Checklist Rubric, 2016-17



2.9 12/13	**Response to Assessment Results: Post-"Closing the Loop" assessments** ✓ Successful Improvement: Provides evidence of improved student learning based on implemented changes

Many departments are still in the early stages of assessment and have not yet had the opportunity to implement and evaluate course or curricular changes prompted by prior assessment results. However, **13** departments reported evidence of improvements in student learning resulting from prior "close the loop" actions.

3.0 3/3 3.0 2/2	Maintenance/Updating Process ✓ Describe the process used to review and update learning goals ✓ 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, many departments have not yet had the occasion to update program learning goals in response to assessment results. Like assessing the effects 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, **three** departments reported reviewing their learning goals based on their assessment efforts. **Two** of these departments (Linguistics and History) have updated their learning goals in response to these reviews. The third, English, will present a proposal for updated learning goals to its faculty in Fall 2017. These three departments join the **8** SAS departments that have updated their learning goals since 2009-10: American Studies, Asian Languages & Cultures, Biological Sciences, Earth and Planetary Sciences, Latin American Studies, Latino & Hispanic Caribbean Studies, Molecular Biology & Biochemistry, and Political Science.

In assessment of student learning outcomes, **24** SAS departments have been designated as using 'best practices' for 2016-17.

American Studies
Art History
Biological Sciences
Cell Biology & Neuroscience
Classics
Comparative Literature
Computer Science
Criminal Justice
English
French
Genetics
Geography
German
History
Italian
Kinesiology and Health
Latin American Studies
Latino and Caribbean Studies
Marine and Coastal Studies
Mathematics
Middle Eastern Studies
Molecular Biology & Biochemistry
Psychology
Religion

Example program assessment reports from three 'best practice' departments are provided in Appendix E (Biological Sciences), Appendix F (Psychology), and Appendix G (History).

Most of the other programs made good or very good progress in their assessment efforts this year. For only **six** programs did it appear that progress had stalled. These programs will be asked to provide mid-year reports in February 2018 to document that they have made plans to implement some form of direct assessment of program learning goals for AY 2017-18. The mid-year reports have proven to be effective tools for encouraging departments to move forward in their assessment efforts. Last year, six departments were required to file mid-year reports. All but one of those departments took significant steps forward in their assessment efforts this year. Two of these departments have been designated as 'best practice' departments this year. The one department that did not make progress this year did not comply with the request to file a mid-year report.

This year, programs were also asked to report on other course and curricular evaluation activities in which their faculty were engaged. Over the past couple years, the SAS Office of Undergraduate Education has realized that many faculty and departments are engaged in assessment efforts that do not always fit neatly into the program assessment report template. The responses to the new question confirm this. A number of responses report collaborations across departments to develop new programs and discuss teaching and assessment methods. Many departments are evaluating their introductory courses to standardize the level at which they are taught and to attract new students to their major and minor programs. A few departments have surveyed students to learn more about their study habits.[6]

[6] Biological Sciences is the leader in SAS in collecting and analyzing data on student learning and the student experience more broadly. See Appendix E (starting on page 34) for a description of the impressive range of evaluation activities conducted by this department in AY 2016-17.

At the school level, particularly notable is the on-going work of the Office of Stem Education established under the Dean for Mathematical and Physical Sciences and the Vice-Dean for Undergraduate Education. It includes the STEM Transformations using Research-based instructional practices, Assessment, and Dissemination (TRIAD) coalition, which "serves as a research and organizing center for implementation and assessment of course transformations based on discipline based education research." TRIAD is building a community dedicated to improvement of instruction in the STEM disciplines, including the quantitative disciplines in the social sciences and humanities, and, as reported on its website, is engaged in four impressive course transformation projects. Assessments of these projects conform to academic expectations for discipline based education research.

The variety of activities reported makes it clear that SAS faculty are committed to finding ways to improve student learning.

AY 2016-17 was the third year that SAS departments were asked to report the most significant challenges faced in the process of assessment. To solicit more information on how these challenges might be addressed, departments were prompted to describe additional data, resources and/or support services that would facilitate departmental assessment efforts. 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. 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. Once again this year, many departments cited the need for more data. A number of departments want to be able to track student performance across courses in their major programs. For example, a few programs cited the desire to know how a student who earned a C in (or had to repeat) an introductory course fared in subsequent courses. Other departments asked for more support and resources for developing and teaching on-line courses.

The SAS Office of Undergraduate Education is committed to providing departments the resources they need to evaluate their courses and programs effectively and efficiently. In February 2017, SAS hired a Director of Student Records and Administrative Systems. The Director, who also serves as an Assistant Dean of advising in the SAS Office of Academic Services, is responsible for facilitating and conducting analyses of undergraduate student data for SAS and providing training to faculty and staff on University information systems and advising tools. This year, the Director played only a small role in program assessment efforts as she was fairly new the job and also engaged in the planning and implementation of the upgrade of Degree Navigator, the degree audit system used University-wide. However, the Director provided data to the Computer Science Department so it could examine how a student's math background was related to performance in the core courses in the Computer Science major. Other departments would like similar data on how performance in one

type, or level, of coursework is correlated with performance in another. Going forward, this sort of analysis will likely play a larger role in departments' assessment efforts.

The SAS Office of Undergraduate Education will also follow up on the requests for more training and examples of best practices. As was done last year, undergraduate chairs from departments with strong assessment records will be asked to discuss their experiences at Undergraduate Chair Meetings as well as in more informal settings with their colleagues from departments that are at earlier stages in the assessment process.

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 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

Carolyn Moehling, Associate Dean for Undergraduate Education

Committee Members:

Emily Allen-Hornblower
Dennis Bathory
Linnea Dickson
Mary Emenike
William Field
Joanne Hunt
Kathleen López
Carolyn Moehling
Kathleen Scott
Kurt Spellmeyer
Michael Weingart

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Appendix A: SAS Program Assessment Form

Department: _____

Submitted by: _____ Date: _____

Assessment Committee/ Working Group	***Faculty who are responsible for leading your department/program efforts on assessment of the major(s), minor(s), and other curriculum and courses.***

This report is on the assessment of:

☐ Major - please specify: _____

☐ Minor - please specify: _____

Program *(Major, Minor)* Learning Goal(s)	
URL for Learning Goals on Dept. Website	
Learning Goals Statement(s) on Syllabi/Synopses	*Dept./program syllabi/synopses/expanded descriptions that include appropriate learning goals statement(s) - **select one:*** Overwhelming majority / More than half / About half / Less than half
Where/ How Are Program Learning Goals Achieved?	***For each goal, identify which course(s) and/or other program requirements most directly require student achievement of the desired learning outcomes*** *(e.g., "300-level dept. seminars," "lab research requirement," etc.)*
How are Program Learning Goals Assessed?	*Identify and briefly describe **at least one assignment or student work product that is used to directly measure student achievement of each learning goal** (preferably at or near program completion) - e.g., "the final project in our capstone course is scored using the program rubrics."*
How Are these Outcomes Measured?	*Please **attach** the relevant rubric, test, survey instrument, etc. used for evaluating student performance for each outcome. Please be sure to describe how your faculty defines different performance levels – e.g., what is required for a "satisfactory" rating or an "outstanding" rating?*

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Appendix A: SAS Program Assessment Form

Summary Of Program Assessment Results For This Academic Year	*Please provide data on the number of students achieving each level of performance on each goal.*
Use of Results; Plan for Going Forward	*Any planned or implemented changes in light of results; plans for the follow-up re-assessment of student outcomes on the goal(s); steps to revise assessment tools, and/or process, etc.*
Timeline/ Schedule for Going Forward	*Describe the timeline for follow-up re-assessment of student outcomes on the goal(s); pilot/ implementation of future assessment(s); analysis of assessment results, plan(s) for addressing areas of concern, etc.*
Maintenance/Updating of Learning Goals and/or Assessment Process	*Describe how assessment plan has been developed and shared with faculty; any changes to learning goals, curriculum, and/or assessment process based on changes in mission, disciplinary advances, changes in student preparation and capacity; etc.*
Other Course/Curricula Evaluations or Reforms in Which Your Faculty Is Engaged, If Any	*Describe other activities to evaluate courses or curricula in which your faculty is engaged; examples would be collaboration with other departments to improve instruction in prerequisite courses, and sharing information and resources with other departments on teaching and assessment methods.*
Most Significant Challenge	*Describe the most significant challenge you have faced this year in developing and implementing changes in the assessment process/plan, or in the curriculum.*
Additional Resources and Services That Would be Helpful Going Forward	*Please describe any additional resources or support services you would like to have to facilitate your assessment efforts in the future.*
Additional Data That Would be Helpful Going Forward	*Please describe any additional data or information you would like to have to facilitate your assessment and improvement efforts in the future.*

Attachments:

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Appendix B: SAS Departments/Programs – Enrollments, Majors and Minors

Department/Program	No. courses in Core	Enrollment 2016-17	Class of 2017*	
			Majors	Minors
AMESALL	33	1,047	2	17
Africana Studies	3	1,853	18	39
American Studies	13	1,698	22	17
Anthropology	20	2,052	36	23
Art History	12	1,920	24	29
Asian Languages & Cultures	17	2,549	34	57
Biological Sciences	12	6,989	296	98
Cell Biology & Neuroscience	0	3,216	167	0
Chemistry & Chemical Biology	10	17,865	61	37
Classics	13	1,998	10	15
Comparative Literature	36	873	8	14
Computer Science	8	10,500	386	46
Criminal Justice	2	3,021	320	0
Earth & Planetary Sciences	14	3,186	11	5
Economics	3	11,904	440	184
English	62	6,420	204	71
Exercise Science & Sports Studies	2	6,043	320	0
French	17	985	23	24
Genetics	16	2,493	52	0
Geography	20	2,861	10	51
German	15	543	3	6
History	66	3,704	137	122
Italian	15	1,181	9	20
Jewish Studies	16	330	2	12
Latin American Studies	2	427	0	4
Latino & Caribbean Studies	12	1,219	7	10
Linguistics	4	1,245	40	9

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Appendix B: SAS Departments/Programs – Enrollments, Majors and Minors

Department/Program	No. courses in Core	Enrollment 2016-17	Class of 2017*	
			Majors	Minors
Marine Sciences (SAS + SEBS)	3	443	0	3
Mathematics	19	22,047	162	91
Middle Eastern Studies	17	440	13	13
Molecular Biology & Biochemistry	7	1,240	45	0
Organizational Leadership	2	173	0	37
Philosophy	20	4,553	51	60
Physics & Astronomy	14	12,702	71	21
Political Science	13	6,499	299	140
Psychology	10	18,209	747	546
Religion	22	1,877	8	28
Russian & E. European Studies (REELL)	14	433	4	11
Sociology	10	7,707	113	510
Spanish & Portuguese	14	1,963	34	89
Statistics	6	5,444	67	48
Women's & Gender Studies	19	3,662	35	104

* Class of 2017 data includes January 2017 and May 2017 graduates and expected October 2017 graduates. Major and minor counts include first and second declarations.

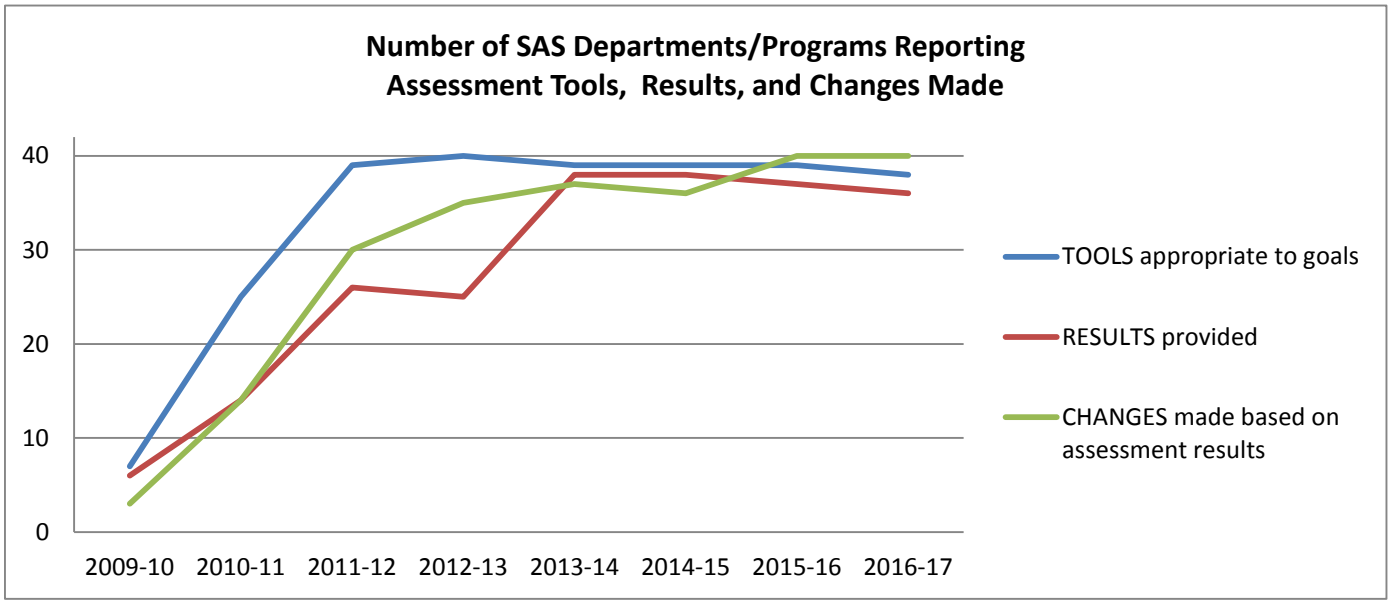
Appendix C: Summary – SAS Departments, Program Assessment Reports

SAS: Summary of Department Assessment Reporting	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
number of SAS departments	38	42*	42*	42*	42*	42*	42*	42*
learning goals articulated - see SAS Undergraduate Program Learning Goals	92% (35)	100% (42)	100% (42)	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)	100% (42)	100% (42)
assessment **tools and measures** used appropriate to goals	18% (7)	60% (25)	93% (39)	95% (40)	95% (39)	93% (39)	93% (39)	90% (38)
results of assessment provided	16% (6)	33% (14)	62% (26)	64% (25)	93% (38)	90% (38)	88% (37)	86% (36)
changes made based on review of assessment results	8% (3)	33% (14)	71% (30)	90% (35)	90% (37)	86% (36)	95% (40)	95% (40)
plans/schedule for **going forward** included	16% (6)	98% (39)	93% (39)	95% (37)	90% (37)	76% (32)	76% (32)	88% (37)

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

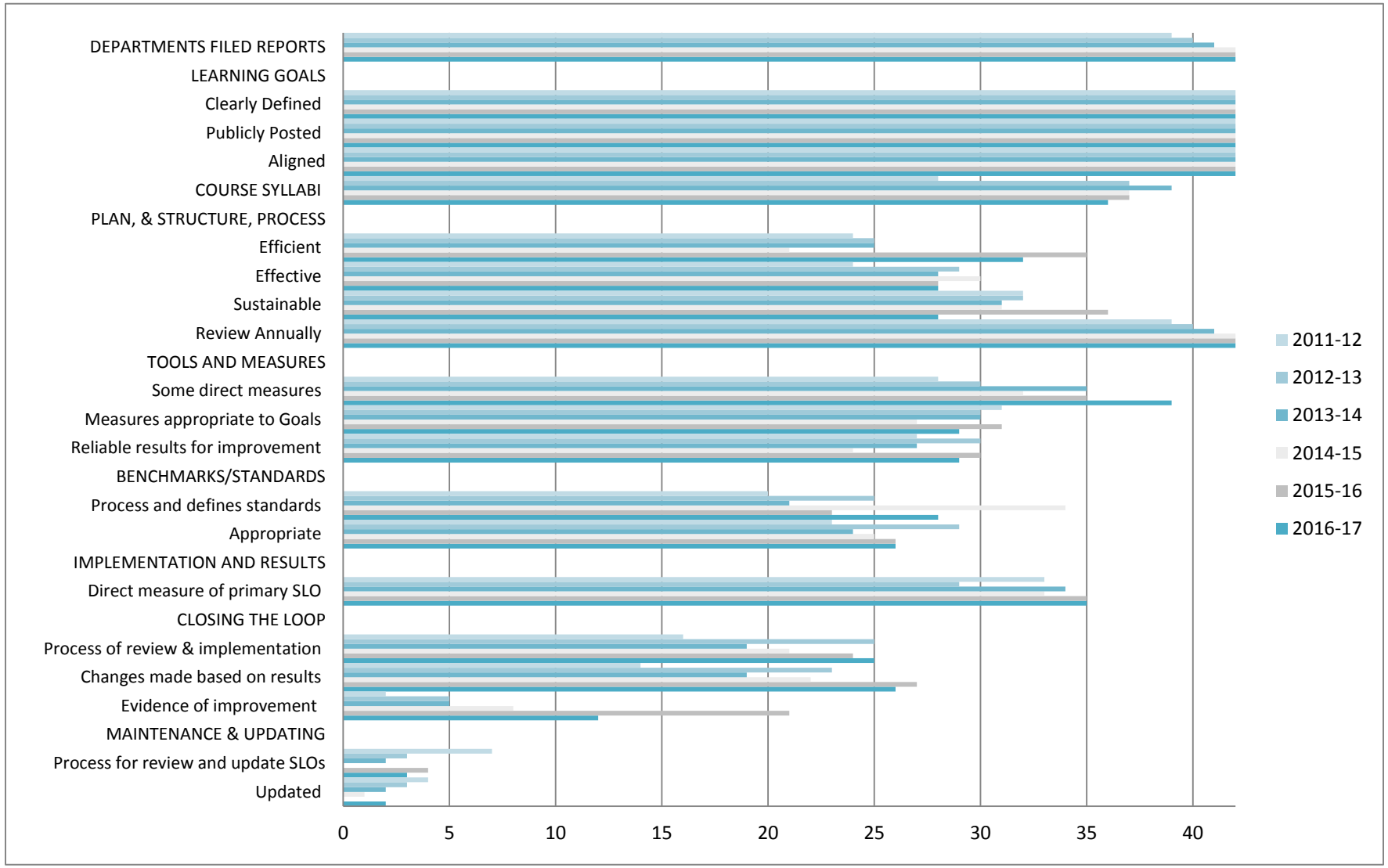
Notes: Only departments scoring 2.0 or higher included in counts. Percentages based on the number of reports submitted for that academic year.

Appendix C: Summary – SAS Departments, Program Assessment Reports

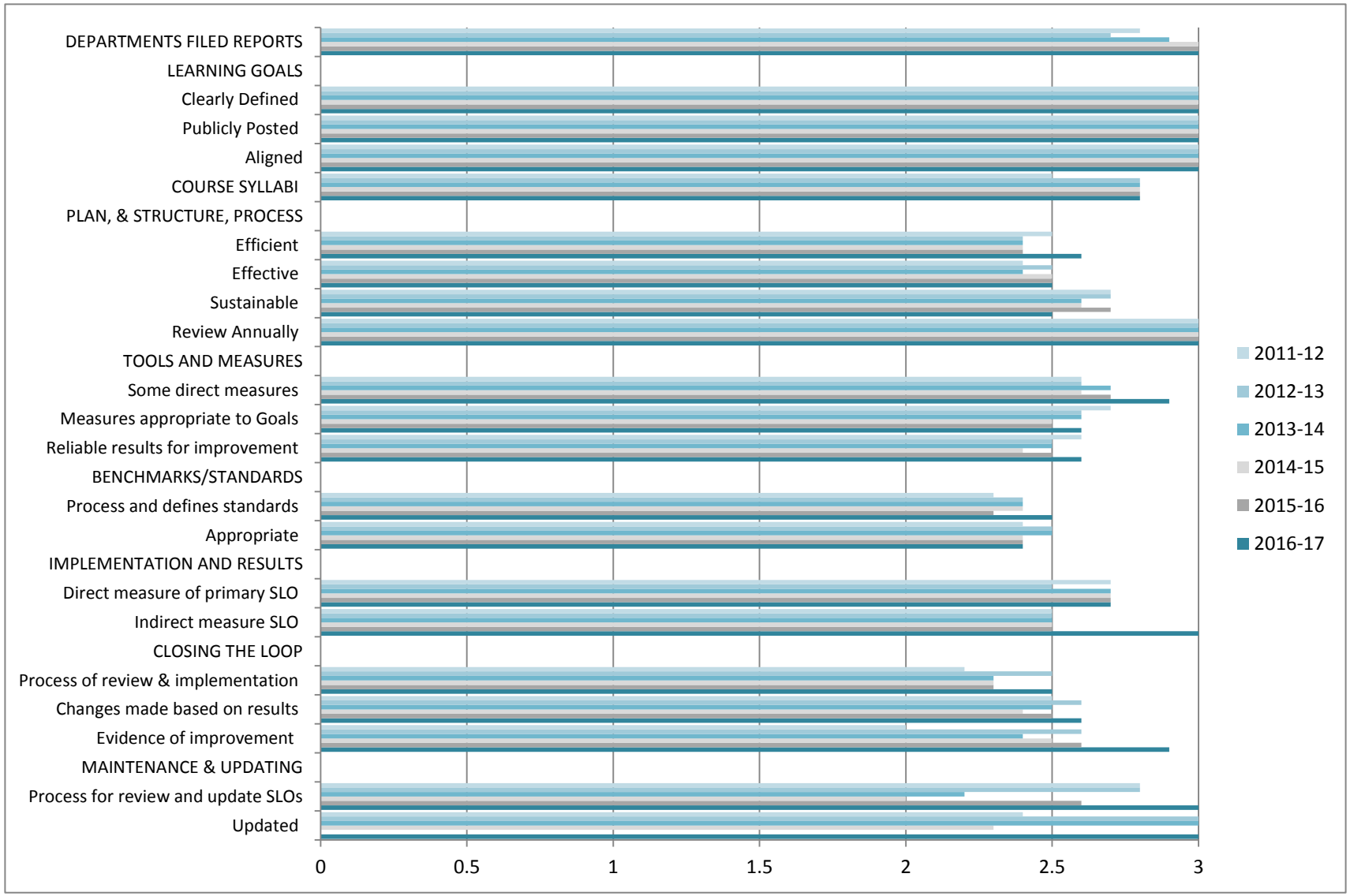


Appendix D: Academic Years 2011-12 through 2016-17

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



Appendix D: Academic Years 2011-12 through 2016-17



Appendix E: Biological Sciences Assessment Report

Department: Biological Sciences

Submitted by: Martha Haviland, Calvin Yu & Anne Carr-Schmid Date: 6/16/17

Assessment Committee/ Working Group	***Faculty who are responsible for leading your department/program efforts on assessment of the major(s), minor(s), and other curriculum and courses.***

This report is on the assessment of:

X	Major - please specify: Biological Sciences
	Minor - please specify:

Program *(Major, Minor)* Learning Goal(s)	Biology Program Student Learning Outcomes (and Mission): I. To acquire the appropriate factual and conceptual knowledge that provides students with a foundation to further their education and career in the areas of life science or health science. Students will be able to demonstrate basic knowledge of the concepts (ex. identify, define, explain), practices and principles that comprise the biological sciences. II. To develop data analysis and statistical reasoning skills that prepare students for a society increasing reliant on the use of data and information. Students will be able to interpret/evaluate patterns in data presented in tables, figures, and graphs as well as organize, summarize and present data. III. To develop the ability to use scientific reasoning as embodied by the structured process commonly known as the scientific method to empower students with the ability to generate and refine knowledge. Students will be able to evaluate and practice science. IV. To develop critical thinking and problems solving skills appropriate to prepare students to evaluate, synthesize and generate knowledge that provides them with a competitive advantage to adapt to an evolving, global, and knowledge based society. Students will be able to demonstrate application of higher order thinking (ex. relate, compare/contrast, classify, diagnosis, treat, evaluate, synthesize, design and hypothesize). Students will develop an understanding of the conceptual connections within biology and those between biology and other scientific disciplines.
URL for Learning Goals on Dept.	http://biology.rutgers.edu/component/content/article/2-uncategorised/16-about

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Website	
Learning Goals Statement(s) on Syllabi/Synopses	*Dept./program syllabi/synopses/expanded descriptions that include appropriate learning goals statement(s) - **select one:*** Overwhelming majority http://biology.rutgers.edu/courses
Where/ How Are Program Learning Goals Achieved?	***For each goal, identify which course(s) and/or other program requirements most directly require student achievement of the desired learning outcomes** (e.g., "300-level dept. seminars," "lab research requirement," etc.)* A primary location where the Biology program offers opportunity to achieve these outcomes are the entry courses for all life science majors, General Biology I & II (GB) 115, 116 and the Biological Research Laboratory (BRL) 117. GB 115 and 116, with their student-centered workshops provide an educational opportunity to achieve goals I & IV. Workshops specifically address these outcomes through active, collaborative and self-reflective educational practices that encourage and model study skills, self-reflection (metacognition), and collaborative learning practices. The cognitive learning skills developed in GB workshop facilitate student success and are transferable to other courses throughout the Biological Sciences program and Rutgers University. Standard workshop practices (for every session) include clicker quizzes, think-pair-share activities, participation in a learning team charged with constructing a visual representation of an assigned complex/dynamic topic, group presentations and a final self-assessment activity. In addition, every student participates in an interactive workshop activity that clarifies the course learning outcomes, teaches the process of learning, and identifies the challenges of transiting from high school to college. BRL 117 provides students with an opportunity to achieve goals II and III. The revised laboratory specifically achieves these through experiential learning. Utilizing team practices, Vernier data-acquisition technology, DNA sequencing technology and data analysis, all students design and execute a capstone aquatic ecology research project. The capstone project requires students to collaborate, generate a written report (in journal article format), and provide an oral presentation as part of a symposium. Once a student successfully completes the General Biology course sequence and BRL 117, they can enroll in upper level life science elective lecture and laboratory courses. Independent research experiences which provide students additional opportunity to develop and strengthen their skills and knowledge

	through research courses are also available; these include the 119:307, 308, 407, 408, 409 Research in Biology, courses typically taken in the junior and/or senior years.
How are Program Learning Goals Assessed?	*Identify and briefly describe* ***at least one assignment or student work product that is used to directly measure student achievement of each learning goal*** *(preferably at or near program completion) - e.g., "the final project in our capstone course is scored using the program rubrics."* Goals I and IV were assessed using data from Fall 2016 General Biology 115 (N= 642) and Spring 2017 General Biology 116 (N=489). In both cases every third student was selected. Students were assessed by the results of a multiple choice final exam administered over a three hour period (140 total questions – *please see appendix for exam questions*). Approximately 70 of the 140 questions pertain to SLO I as they measure if students can demonstrate use of content including the ability to identify, define and recall information. Similarly, students are assessed on SLO IV by the results of the other 70 questions that measure if students can demonstrate use of higher order thinking with biology content including the ability to classify, diagnosis, evaluate, synthesize and hypothesize. This year, SLO II was assessed in the Spring 2017 General Biology 117 course by analyzing (N=801) individual student performance on an assignment measuring the ability to identify and evaluate data and to organize and summarize data. SLO III was assessed in the Spring 2017 General Biology 117 course by analyzing (N=800) group performance on a capstone research project and presentation (*please see appendix for detailed description*). Next year we will include data on SLO I and SLO IV from BRL 117 as well. These outcomes will be measured in a similar fashion to GB115 and GB116, through the results of multiple choice questions on a final exam. Goals I, II, III and IV are also assessed in 119:307, 308, 406, 407, and 409 which are Research in Biology courses that students typically take in the junior and/or senior years (although we did have a few sophomores as well this year). The Research in Biology courses provide students with an opportunity to achieve goals I- IV through experiential learning. Students are required to conduct an approved, life science based, independent research project under the mentorship of a Rutgers-NB faculty member and generate a 10 page final written research paper (in journal article format). For students in 119:409, Honors in Biology, students generate a minimum 30 page final written research paper. Each course was assessed separately for Goals I-IV in the Spring 2017 by two methods: 1) analyzing student performance on the final research paper done by an independent outside reviewer not associated with the laboratories/faculty 2) faculty mentor evaluation of the full semester

work, that is both the student's performance on the research paper as well as their performance in the laboratory. Students performance on the research papers were assessed for learning goal I by analyzing their performance in incorporating appropriate and accurate background information in their research paper necessary to provide a context for their research project. Learning goal II was assessed by analyzing the presentation, analysis, and interpretation of their experimental data within the results section. Learning goal III was assessed through two rubrics. They included analyzing the incorporation of a clear hypothesis and justification of the hypothesis within the paper and the use of appropriate methodology. Learning goal IV was assessed through the analysis of the ability of students to draw appropriate conclusions and identify implications and future directions of their research.

Faculty members were provided with a grading sheet and rubric (*see appendix*) to utilize in evaluating students' final research paper and assigning their course grade for laboratory and research paper. They were also given a detailed rubric providing specific guidelines for assigning rankings (unsatisfactory through exemplary) and detailed descriptions of each of the learning goals (I-IV). The faculty were informed that completion of the rubric assessment was requested to assist us in evaluating whether our curriculum learning goals were being met through the Research courses and that this process was separate from grading per se.

Biology Program Curriculum Map

	SLO I Students will be able to demonstrate basic knowledge of the concepts, practices and principles that comprise the biological sciences.	**SLO II** Students will be able to interpret/evaluate patterns in data presented in tables, figures, and graphs as well as be able to organize, summarize and present data	**SLO III** Students will be able to evaluate and apply the practice of science.	**SLO IV** Students will be able to demonstrate application of higher order thinking
119:115	**X**			**X**
119:116	**X**			**X**
119:117	**X**	**X**	**X**	**X**
119:307	**X**	**X**	**X**	**X**
119:308	**X**	**X**	**X**	**X**
119:406	**X**	**X**	**X**	**X**
119:407	**X**	**X**	**X**	**X**
119:408	**X**	**X**	**X**	**X**
119:409	**X**	**X**	**X**	**X**

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	Senior Survey: We assessed graduating seniors' overall satisfaction with the Biological Sciences major and support services (advisors and staff from the offices of DLS-OUGI, HPO and ODASIS), after graduation plans, and to assess key skills seniors feel they obtained and those they had hoped to, but had not.
How Are these Outcomes Measured?	*Please **attach** the relevant rubric, test, survey instrument, etc. used for evaluating student performance for each outcome. Please be sure to describe how your faculty defines different performance levels – e.g., what is required for a "satisfactory" rating or an "outstanding" rating?* Our criteria for performance for both GB115 and GB116 for both SLO I and SLO IV are the following: less than 44% is Unsatisfactory, 45 to 59% is Satisfactory, 60 to74% is Good, and 75% or greater is Outstanding. *Please see appendix for exam questions.* Our criteria for performance for GB 117 for SLO II and SLO III are: less than 70 points is Unsatisfactory, 70 to 79 points is Satisfactory, 80 to 89 point is Good and 90 or greater points is Outstanding. *Please see appendix for assignment.* Our criteria for performance for 119:307, 308, 406, and 407 for SLO I-IV are : a rank of 1 (novice or unsatisfactory) is a rank for students who are far from achieving the learning goals set for this class; a rank of 2 (developing or satisfactory) is for students who are on their way to achieve the learning goals of this class.; a rank of 3 (proficient or good) is a rank for students who have achieved the learning goals of this class; a rank of 4 (exemplary or outstanding) is a rank for students who have surpassed the learning goals of this class. *Please see appendix for scoring rubric.* **Senior Survey**: We have completed our third annual senior survey (*please see appendix*) to assess graduating seniors' overall satisfaction with the Biological Sciences major and support services (advisors and staff from the offices of DLS-OUGI, HPO and ODASIS), after graduation plans, and to assess key skills seniors feel they obtained and those they had hoped to, but had not. The survey had been administered online in the past, but we chose to incorporate the in-person survey into the Biological Sciences celebration event to improve participation.
Summary Of Program Assessment Results For This Academic Year	*Please provide data on the number of students achieving each level of performance on each goal.*

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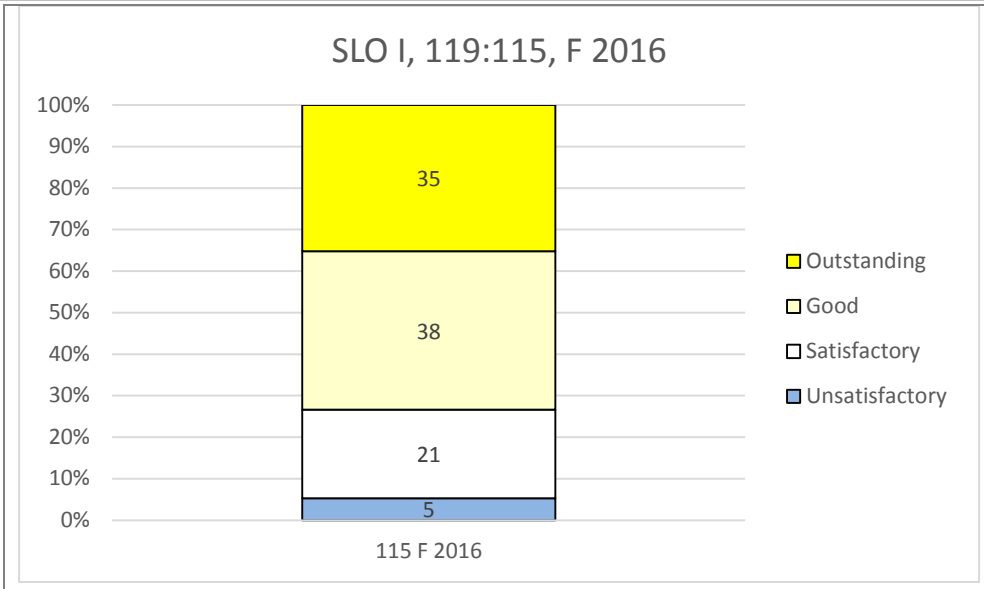
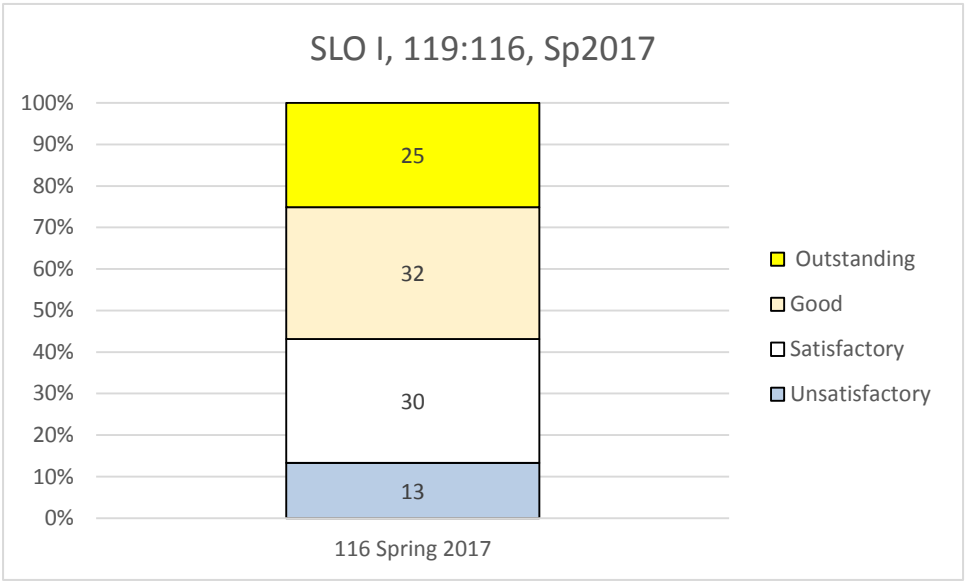


	Outstanding	Good	Satisfactory	Unsatisfactory
Percent	35	38	21	5
Count	226	244	138	34



	Outstanding	Good	Satisfactory	Unsatisfactory
Percent	25	32	30	13
Count	123	155	146	65

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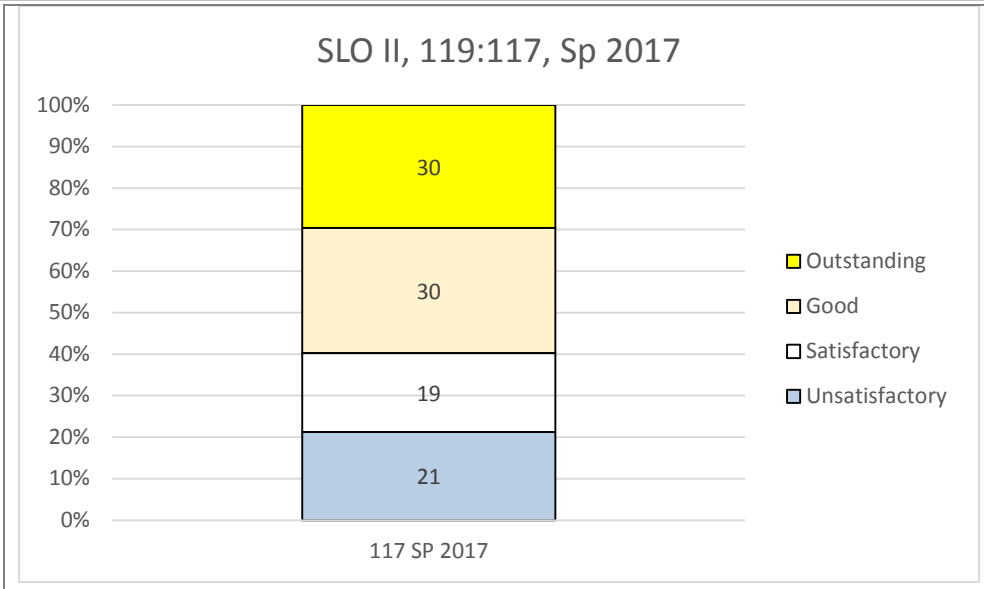
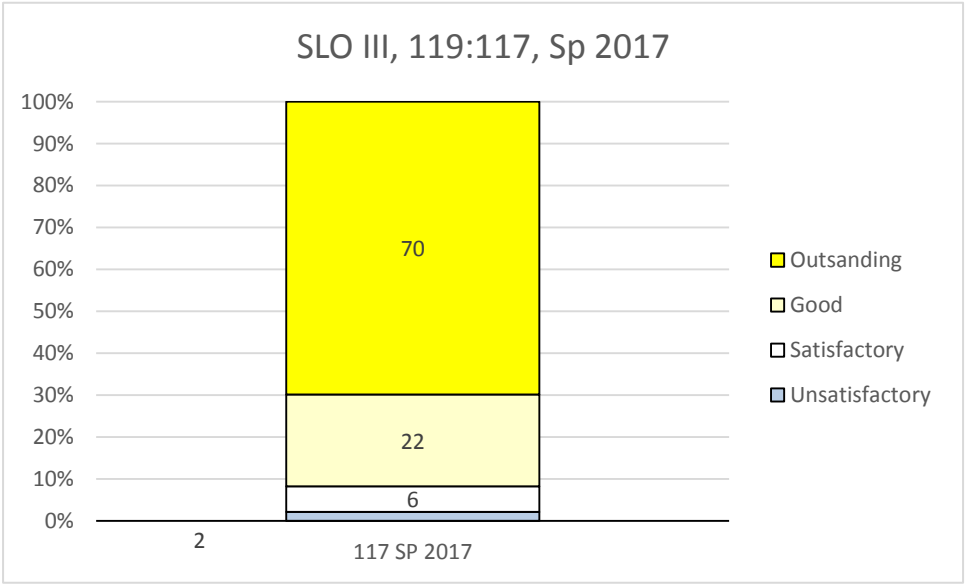


	Outstanding	Good	Satisfactory	Unsatisfactory
Percent	30	30	19	21
Count	237	241	152	170



	Outstanding	Good	Satisfactory	Unsatisfactory
Percent	70	22	6	2
Count	560	176	49	17

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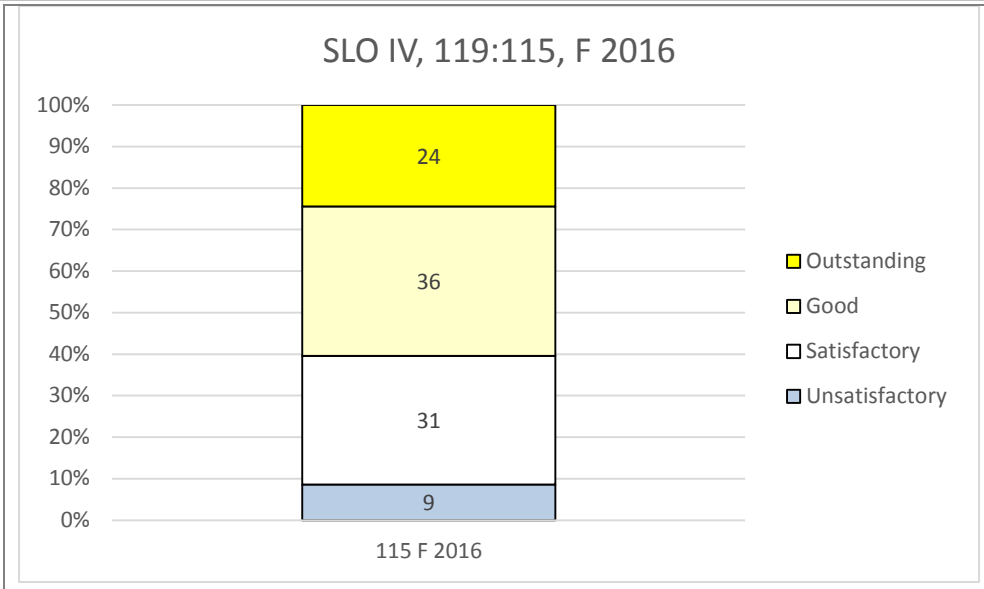
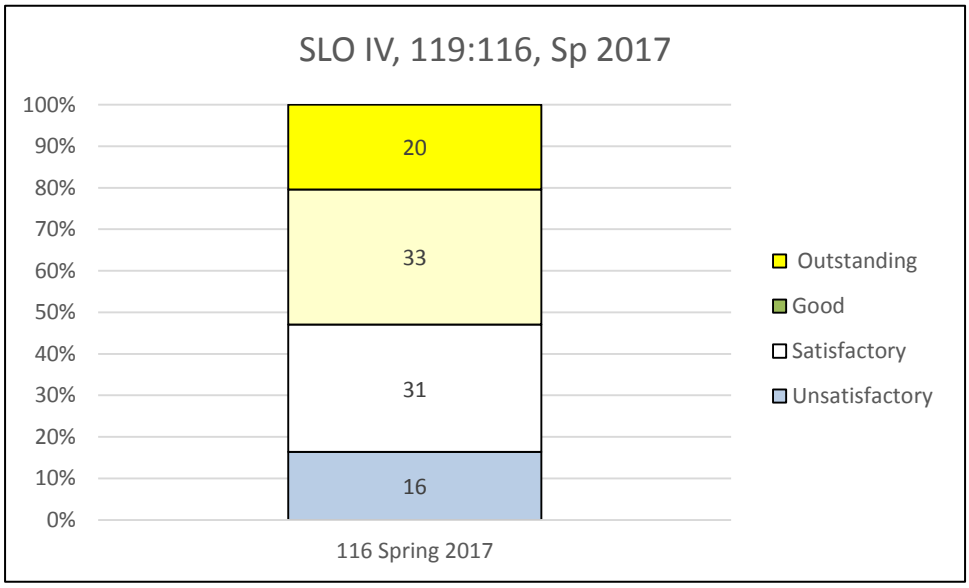


	Outstanding	Good	Satisfactory	Unsatisfactory
Percent	24	36	31	9
Count	157	231	199	55



	Outstanding	Good	Satisfactory	Unsatisfactory
Percent	20	33	31	16
Count	100	159	150	80

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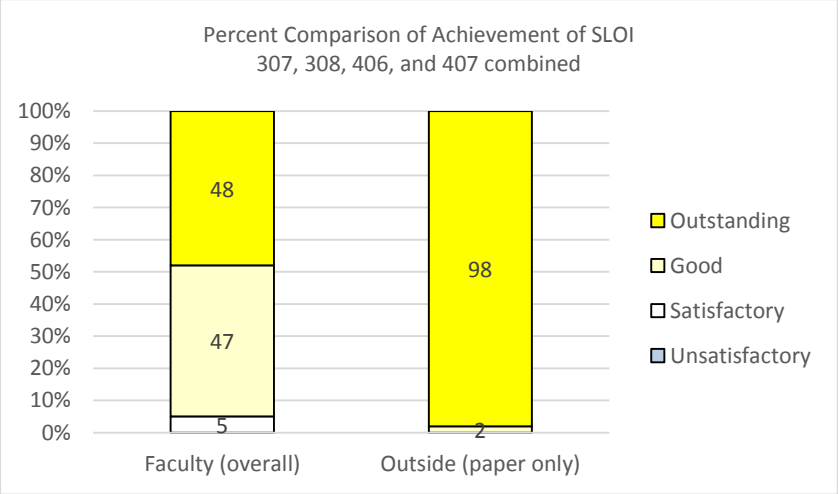
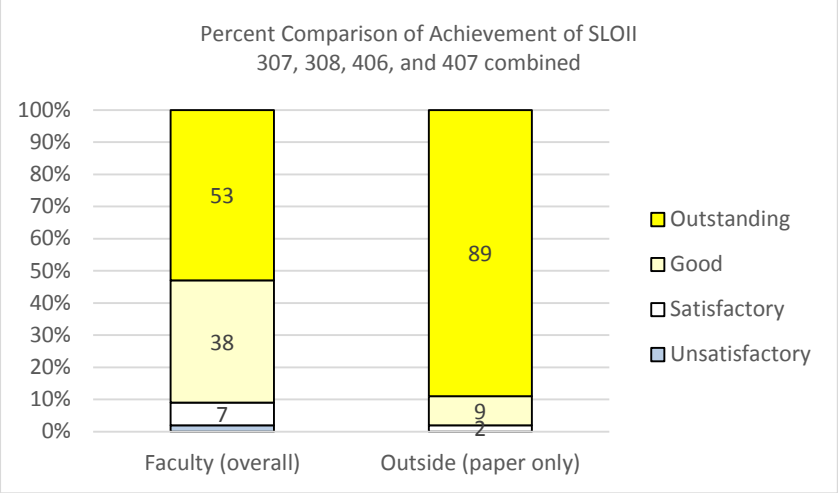
Research Courses Learning Goal I: 307, 308, 406, and 407 combined

	Outstanding	Good	Satisfactory	Unsatisfactory
Faculty (overall)	28(48%)	27(47%)	3(5%)	0(0%)
Outside (paper only)	57(98%)	1(2%)	0(0%)	0(0%)



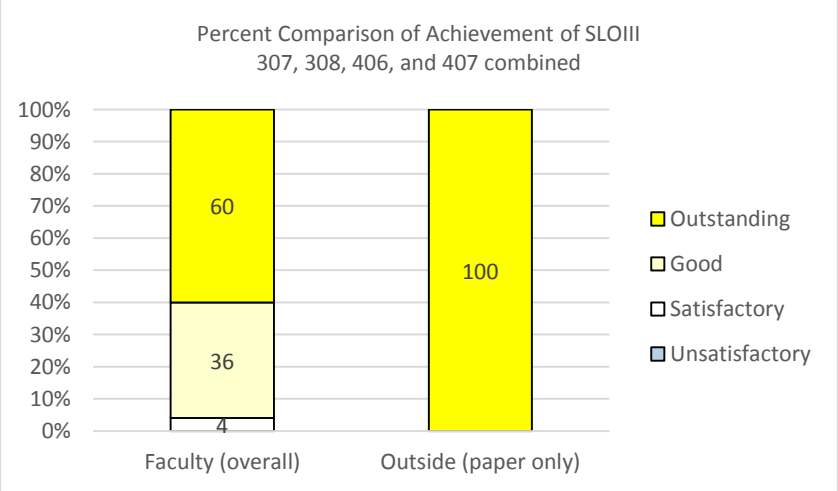
Learning Goal II: 307, 308, 406, and 407 combined

	Outstanding	Good	Satisfactory	Unsatisfactory
Faculty (overall)	31(53%)	22(38%)	4(7%)	1(2%)
Outside (paper only)	52(89%)	5(9%)	1(2%)	0(0%)



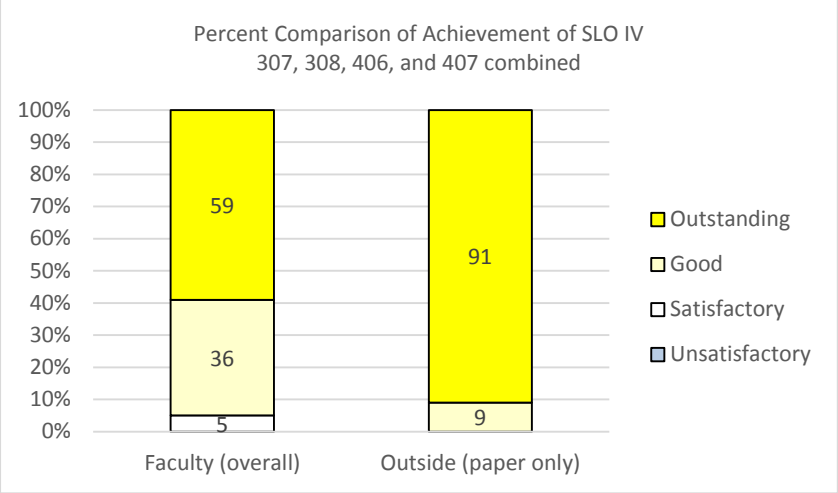
Learning Goal III: 307, 308, 406, and 407 combined

	Outstanding	Good	Satisfactory	Unsatisfactory
Faculty (overall)	35(60%)	21(36%)	2(4%)	0(0%)
Outside (paper only)	58(100%)	0(0%)	0(0%)	0(0%)



Learning Goal IV: 307, 308, 406, and 407 combined

	Outstanding	Good	Satisfactory	Unsatisfactory
Faculty (overall)	34(59%)	21(36%)	3(5%)	0(0%)
Outside (paper only)	53(91%)	5(9%)	0(0%)	0(0%)



Summary of Research Courses:
This year we continue to see a difference between faculty evaluations of students' total performance during the semester (laboratory work plus research paper) versus our outside reviewer's analysis of the research paper alone. While both analyses indicate that the *overwhelming majority* of our students are successfully meeting the departmental learning goals, faculty mentors on average were more discerning in their student evaluations, than observed in previous years. We hypothesized previously that faculty may have confounded grading and assessment of learning outcomes upon our initial introduction of the assessment rubric. We have sought to communicate the difference between student grades and assessment of learning outcomes with the faculty, which appears to have been successful. The vast majority of the students earn an A in the research courses and grading of the research course is not limited to product criteria, and so it is quite appropriate to include process criteria (*e.g.* attendance) and progress criteria (*e.g.* overall improvement). It should be noted that all Honors in Biology students (6 total, including one G.H. Cook enrolled student who earned Honors) received outstanding evaluations on SLO I-IV (data not shown). We are pleased with the continued student outcomes of our research program.

Senior Survey:
We did have an increase in respondents (n=86) to the brief, anonymous survey. The majority (88%) of the respondents were either very satisfied or satisfied with their Biological Sciences major, which we are pleased with.

Respondents primarily cited a specific life skill and academic skill (e.g. time management, how to study, critical thinking) as the single most important skill they had acquired through their science coursework and laboratory work. A smaller contingent responded with research and lab experience or specific techniques, which we were pleased to see. When surveyed as to the skill they wished they had acquired, our respondents overwhelmingly stressed research and laboratory skills.

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	Interestingly, many respondents also stressed science communication skills (oral and written), with particular interest in developing networking skills and ability to communicate with faculty.
Use of Results; Plan for Going Forward	*Any planned or implemented changes in light of results; plans for the follow-up re-assessment of student outcomes on the goal(s); steps to revise assessment tools, and/or process, etc.* While encountering a few setbacks we are encouraged with the general progress of student achievement. We attribute this growth to our GB and BRL faculty and teaching assistants' dedication toward student learning and continuous process improvement. Our GB and BRL review their processes and curricula on a weekly basis seeking to identify areas for improvements. For the coming year the topic of genetics has been targeted for improvement. This area has traditionally been a challenging topic of many students. GB 115 will be introducing new educational manipulatives to the workshop to provide students an alternative means to comprehend the material. Another area of reform is the addition of a "capstone" lectures. The goal of this addition is to further help students develop a holistic view of the material that integrates several topics covered in previous lectures. A third area of reform will be career preparation and placement. Many students have difficulty itemizing and expressing the cognitive and laboratory skills developed in the Biology program to potential employers, therefore BRL 117 will further strengthen the relationship among the skills learned in the Biological Science Program, resume building and workforce placement. The results of the assessment of our Research in Biology courses continues to impress upon us the importance of undergraduate students participating in independent research. For every one of our learning goals, student success was greater in the Research courses than at the end of the General Biology course sequence. At least some of this improvement is likely due to other coursework in the Biological Sciences major, but the independent research experience is also likely to be playing a significant role in student learning. The results of our senior survey demonstrates that our students also recognize the importance of research. Thus, one of our immediate goals is to identify and develop novel ways to encourage underrepresented students to participate in research and to bring interested faculty and our students together. We also recognize that research in an academic research lab is one of many experiential based learning opportunities for Biological Sciences majors. One of our long term goals will be to examine the feasibility of developing credit-based options for alternative experiential learning opportunities our students. Finally, we will begin examining the logistics of the development a certificate program for our majors which could combine many of our long term goals listed above, by integrating experiential-based learning experiences (research

	and other) with a curriculum geared toward developing students' life science communication skills and career preparedness.
Timeline/ Schedule for Going Forward	*Describe the timeline for follow-up re-assessment of student outcomes on the goal(s); pilot/ implementation of future assessment(s); analysis of assessment results, plan(s) for addressing areas of concern, etc.* GB 119:116 has already begun to experiment with the introduction of an infectious disease lecture. Discussion have already begun to add a similar "capstone lecture" to GB 116. Changes are expected to be fully implemented in Fall 2017. New material for genetics have already been purchased and will be integrated in Summer 2017. Changes for the BRL career preparation will be introduce in the Fall 2017. We plan to begin discussions on a possible Certificate in Communication in Biological Sciences that will incorporate both an experiential learning and writing and oral communication skills in the coming year. If successful, we will submit a formal proposal to the SAS Curriculum Committee in Fall of 2018.
Maintenance/Updating of Learning Goals and/or Assessment Process	*Describe how assessment plan has been developed and shared with faculty; any changes to learning goals, curriculum, and/or assessment process based on changes in mission, disciplinary advances, changes in student preparation and capacity; etc.*
Other Course/Curricula Evaluations or Reforms in Which Your Faculty Is Engaged, If Any	*Describe other activities to evaluate courses or curricula in which your faculty is engaged; examples would be collaboration with other departments to improve instruction in prerequisite courses, and sharing information and resources with other departments on teaching and assessment methods.* Other Course/Curricula Evaluations or Reforms in Which Your Faculty Is Engaged INTRODUCTION: A Pathway to Critical Thinking and Problem Solving for Students and Faculty Over the past six years, the Biological Science program (BSP) has utilized assessment principles to reform the undergraduate educational experience. Responding to School of Arts and Science (SAS) stakeholders' interest in the development of undergraduates who are prepared for cognitive and non-routine roles in society, the BSP has prioritized the modernization of their student learning outcomes (SLOs) that emphasize critical thinking and problem solving. Identifying key impediments to the achievement of these SLOs, the BSP has set out to improve program alignment by increasing the levels of transparency, coherency and engagement in the undergraduate learning experience. To accomplish this task the BSP has (1) transformed and aligned its curriculum; (2) embraced the responsibility

	of the student development and engagement of thousands of students in both learning and career planning skills to facilitate achievement of SLOs, to improve student persistence and career preparedness; (3) developed an engaged faculty culture dedicated to the continuous improvement of student learning and the undergraduate educational experience within the School of Arts and Science. PROBLEMS ADDRESSED: 1. Disjointed Curriculum: With NSF support, the revisions in General Biology curriculum and measurements places greater emphasis on SLOs related to higher order thinking and the application of science as suggested by AAAS's Vision & Change report and the new Medical College Admission Test. To achieve SLOs of critical thinking and problem solving, students are challenged to have a holistic view of course content. Only after students have a systems view of course content are they equipped to diagnosis a disruption in a system and identify appropriately problem solve. The historical introductory course sequence was not well aligned. Vague and rudimentary SLOs poorly sequenced and linked concepts and themes among and within these courses. A similar opaque and disjointed relationship resided among lecture and exam materials. Furthermore, courses lacked evaluation resources to adequately measure the new SLOs. 2. Disenfranchised Faculty: Despite their experience and expertise, many faculty and teaching assistants teaching in General Biology were unaccustomed to the new expectations and demands of the changing higher educational industry emphasizing student learning outcomes and fiscal accountability. Often following a traditional framework, faculty and TAs were comfortable with the role of the dissemination of content. Furthermore disenfranchised to the improvement of learning, faculty had only limited opportunities with the responsibilities of advancing student achievement. 3. Rote & Surface Learners: Notwithstanding their abilities and past academic accomplishments some students have difficulty transitioning into and progressing through the University environment. These students may display indifference to content and adhere to the study habits and views of learning developed and employed in high school. Many students apply passive and rote learning methods that produce a surface comprehension of material, in contrast in order to apply complex skills such as critical thinking and problem solving, students need to actively apply several unfamiliar skills. They need to (1) differentiate and select essential information form background information, (2) construct or identify the pattern of the structure and relationship of essential information. (3) activate their knowledge and receive feedback on the accuracy and functionality of their internalized construction of the material, (4) recalibrate their knowledge, and (5) monitor and adjust these processes to adapt to their goals and learning environment. The gap among the learning skills possessed by the large portion of the student population to the learning skills required to achieve the BSP's new SLOs represented a major challenge. SOLUTIONS AFFECTED: 1. Curriculum Alignment: To advance the new SLOs, the BSP faculty have evaluated and mapped the General Biology curriculum by prioritizing, coordinating and aligning (1) course topic/content, (2) associated SLOs by topic area, and (3)

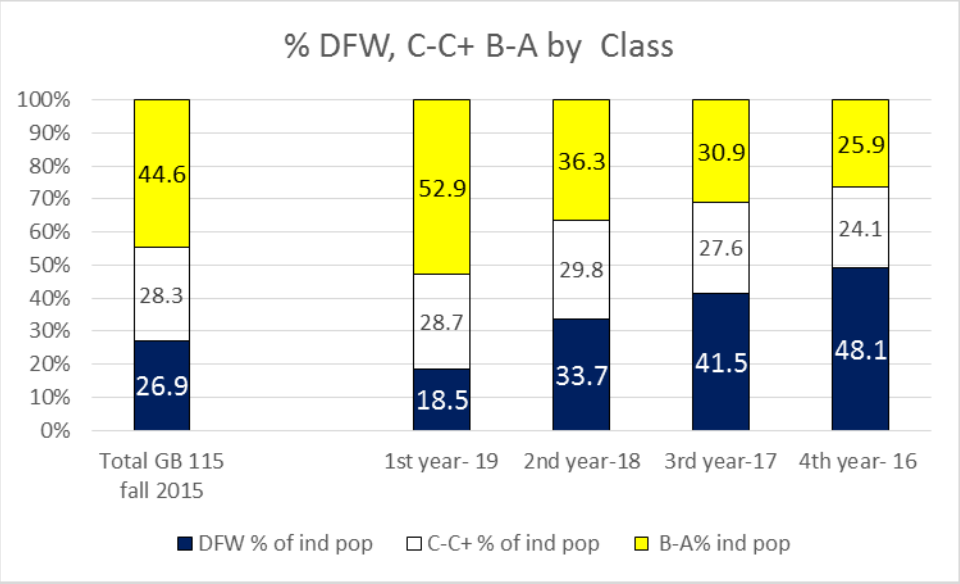
student learning guidelines (SLGs), which are faculty developed suggestions for the organization of the underlining structure/pattern of content. (*See appendix for example of BiOs form*)

A closely linked project is the development of a (4) new test bank of hundreds of exam questions that are aligned to the curriculum and SLOs and which measure these new SLOs. In addition the BSP is planning the development of a database designed to generate and analyze exam items and track student learning trends.

2. Commitment to Student Persistence by Skills development in Metacognition, Team Work, and Career Exploration

The BSP has taken the responsibility of student persistence and it thus evaluates student study habits, demographics and performance on selective academic assignments and their relationship to undergraduate transition and retention.

Demographic Trends: 115 Fall, 2015



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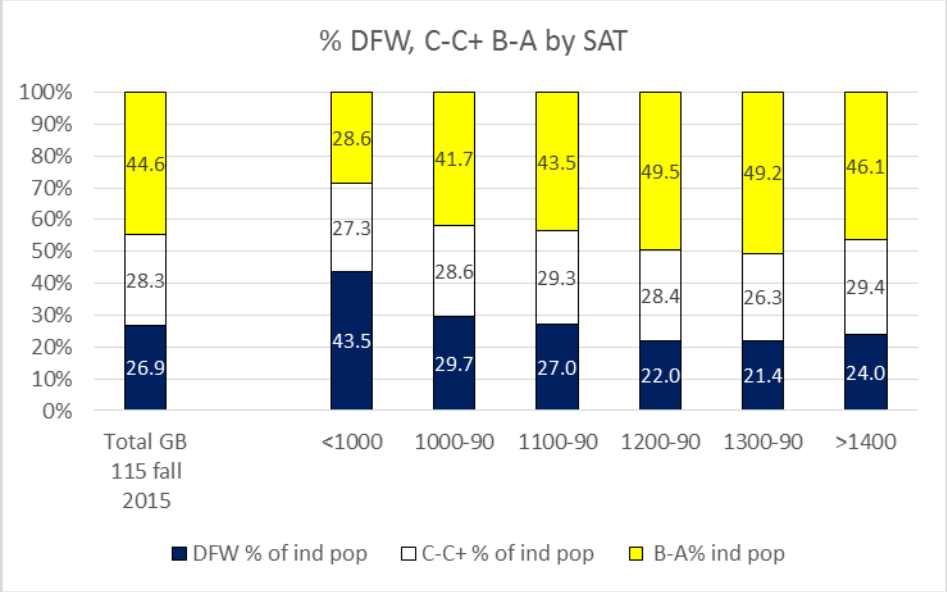

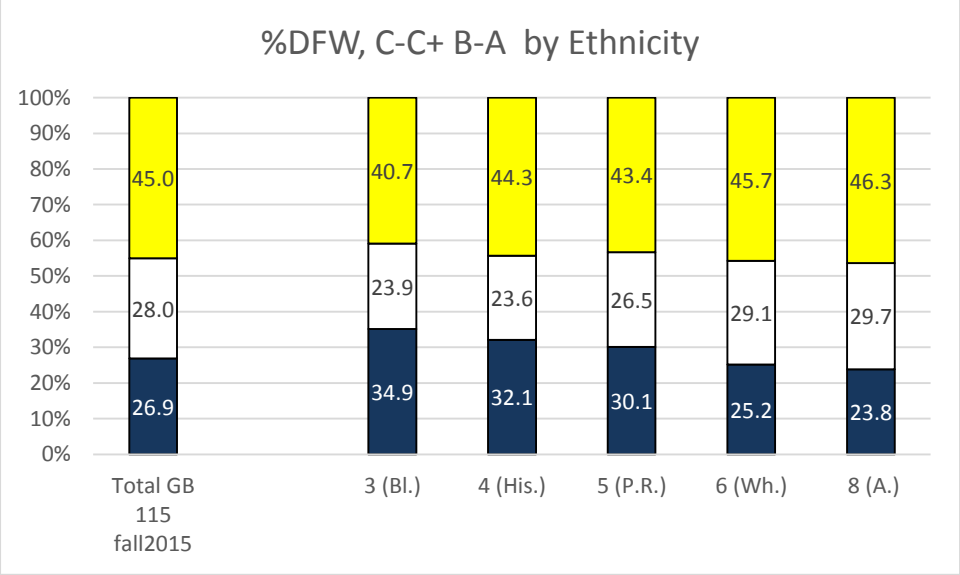

Demographic Trends Student Persistence: 115 Fall, 2015

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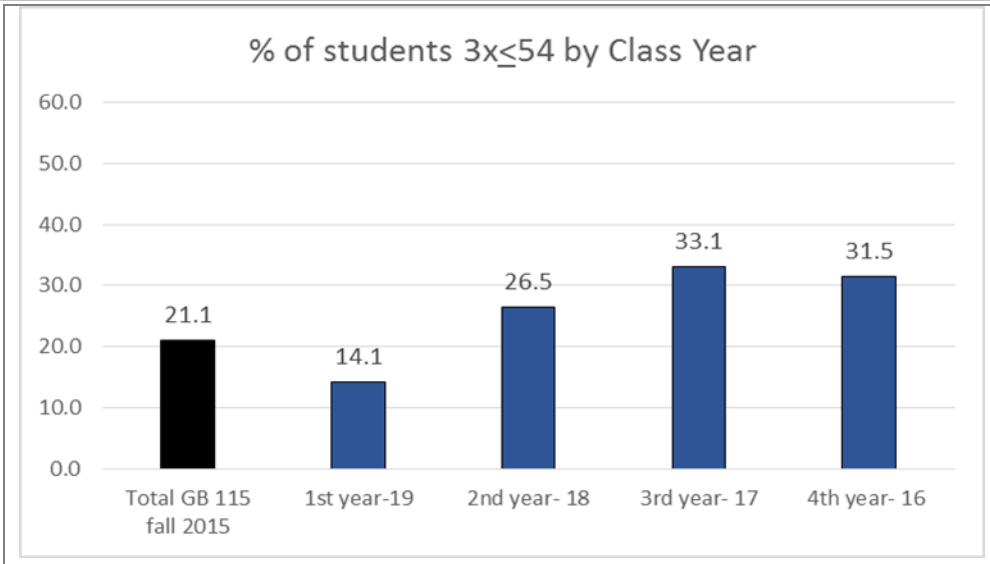

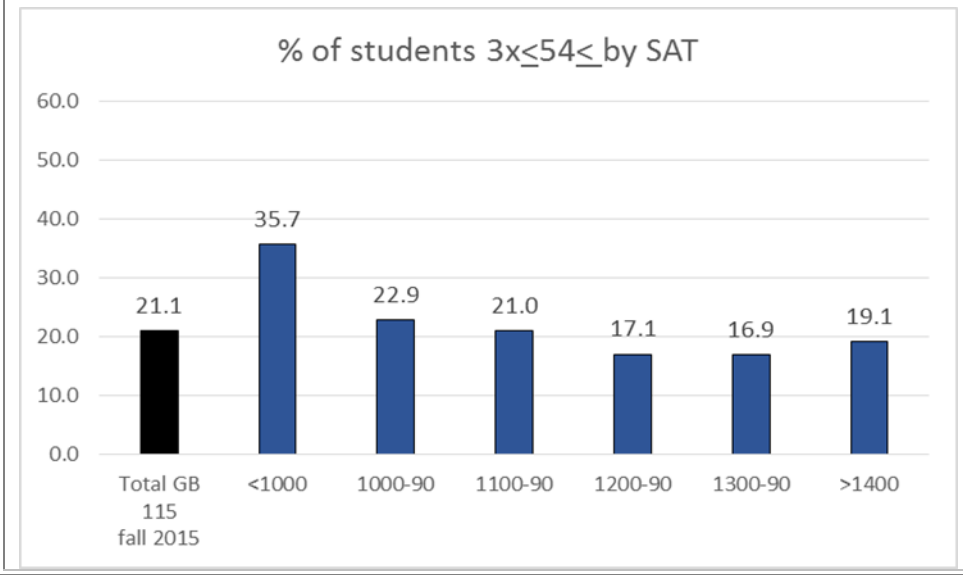

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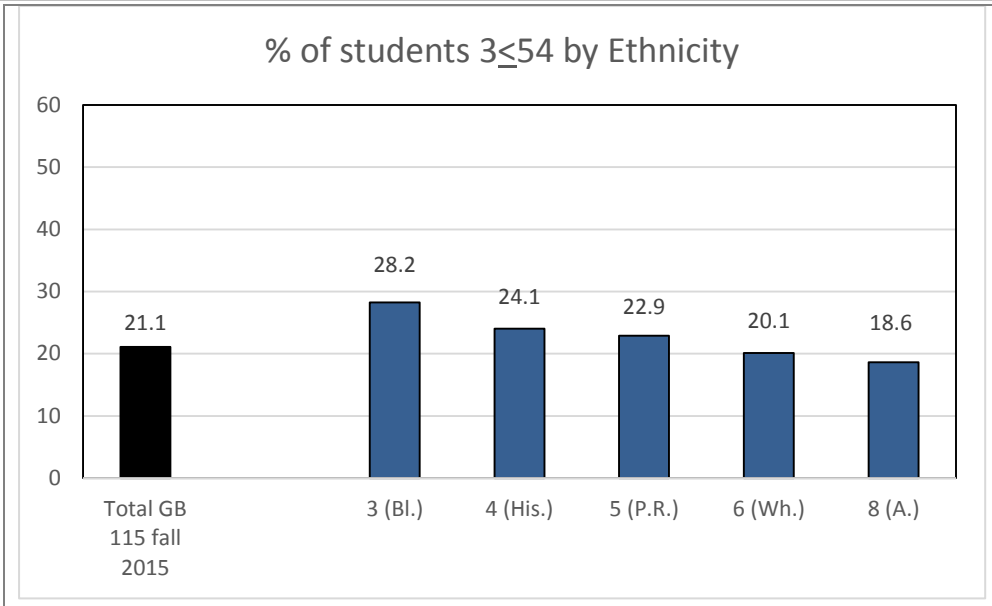

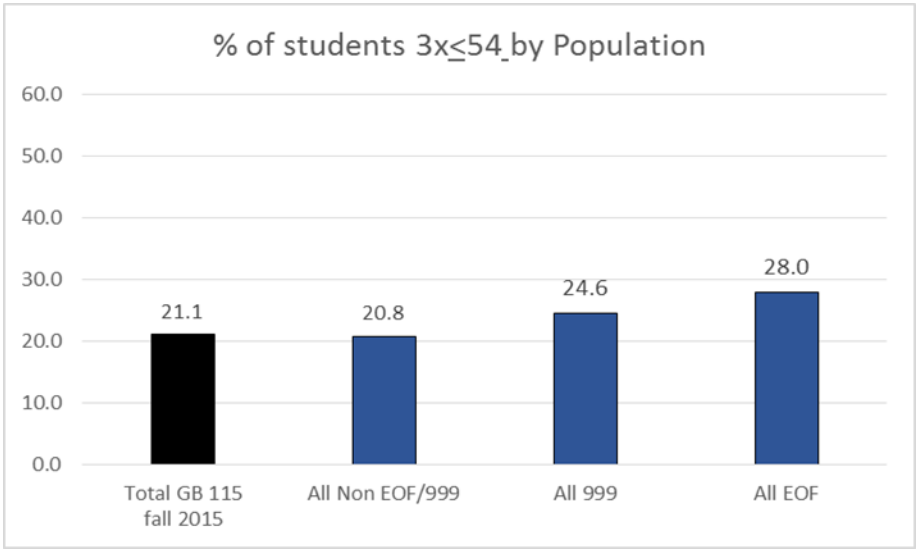

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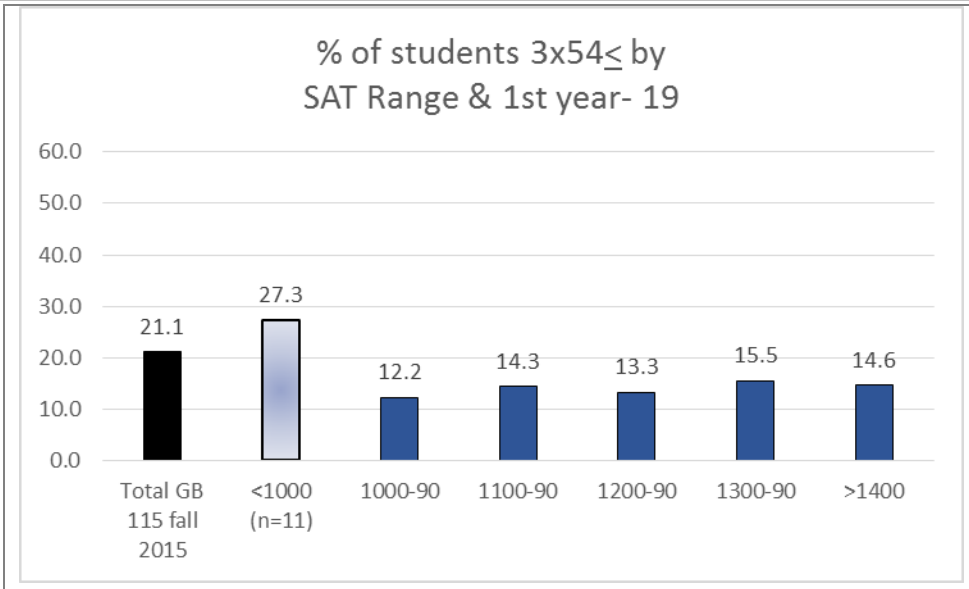

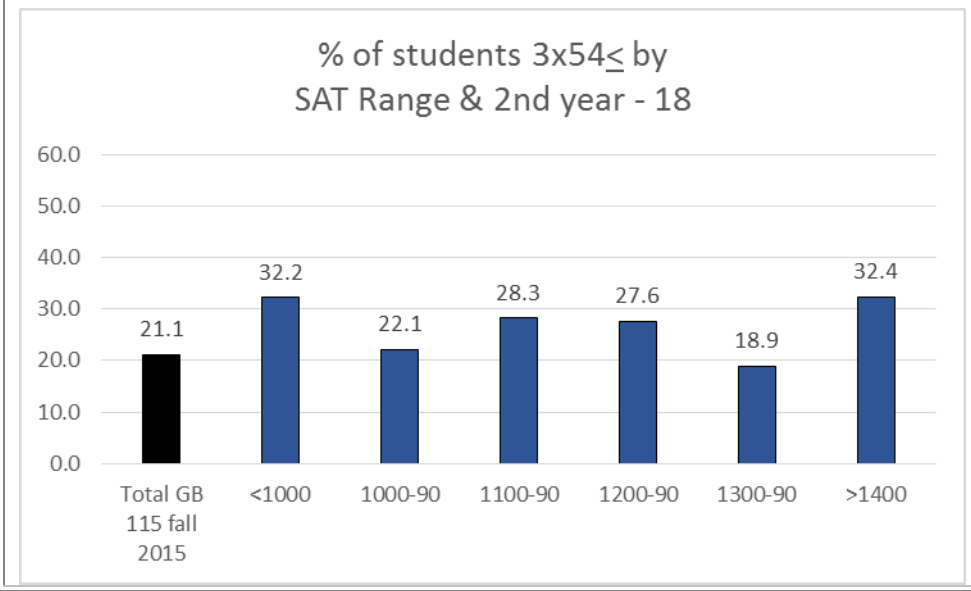

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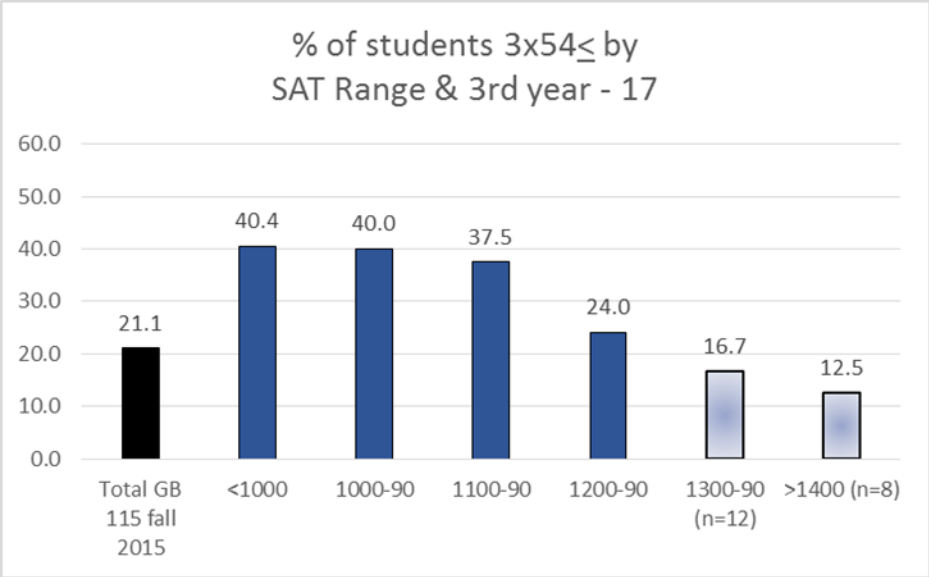

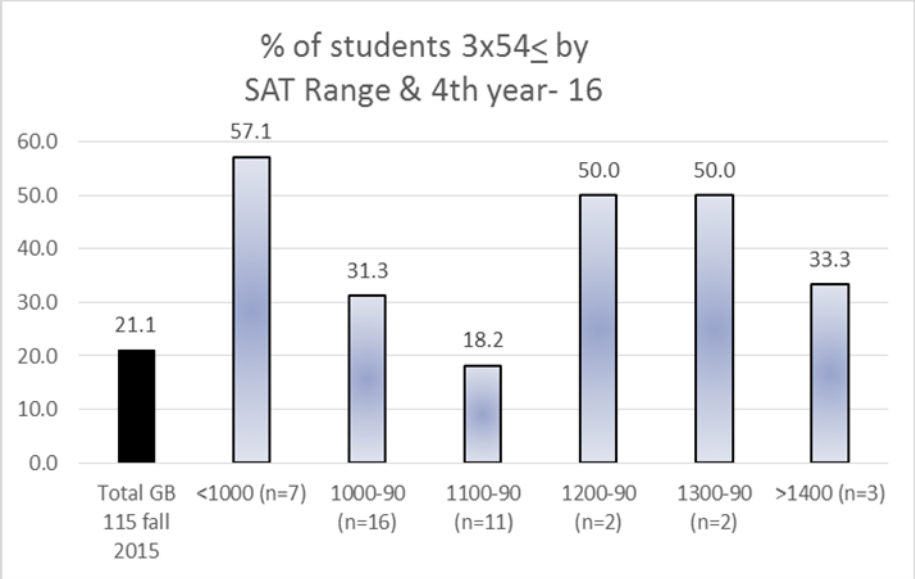

Study Habits: GB 116, SP 2017

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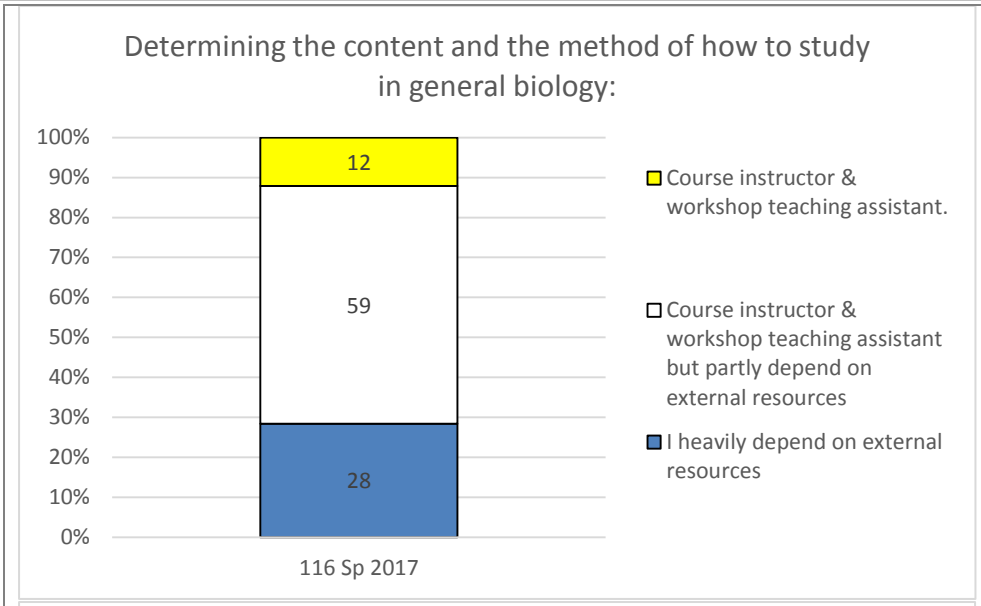
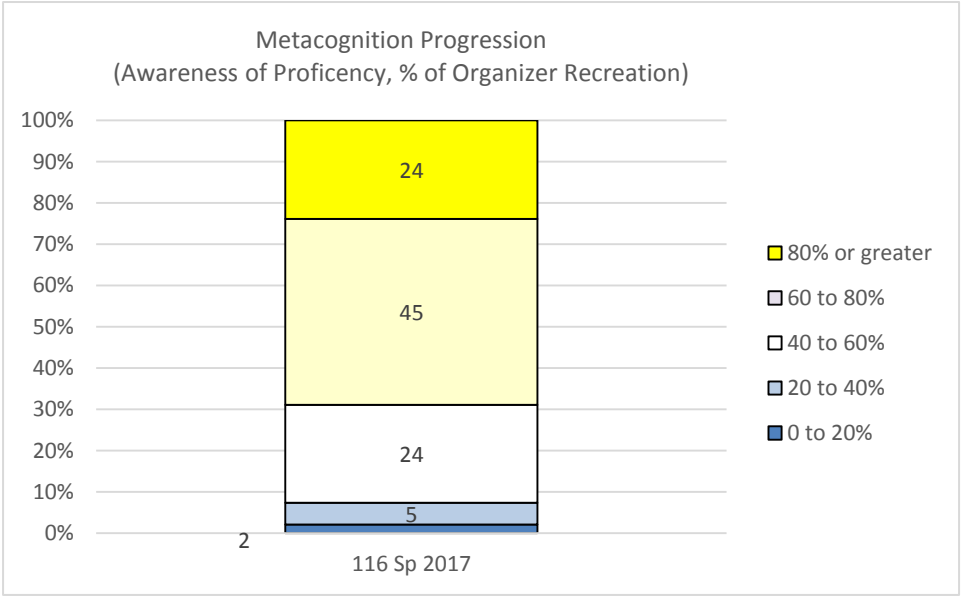
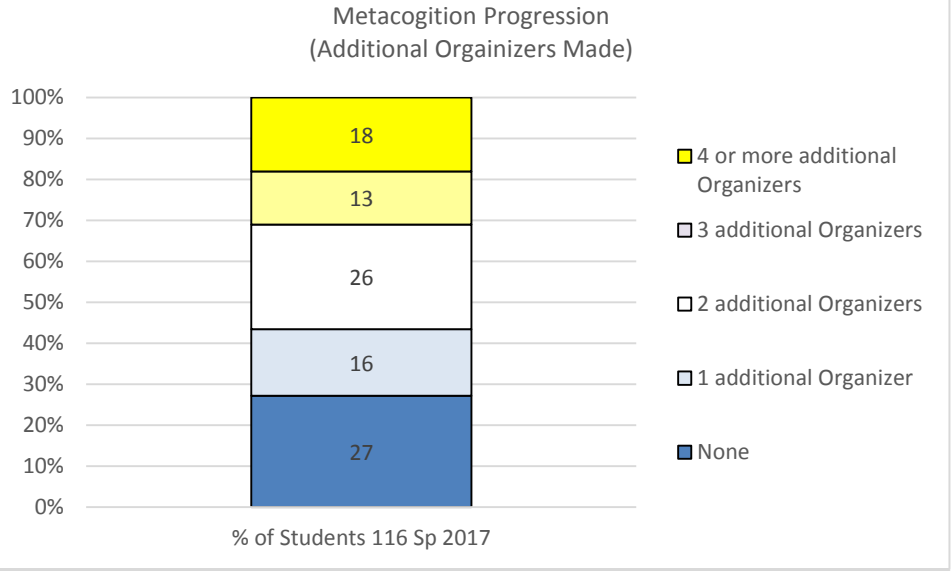
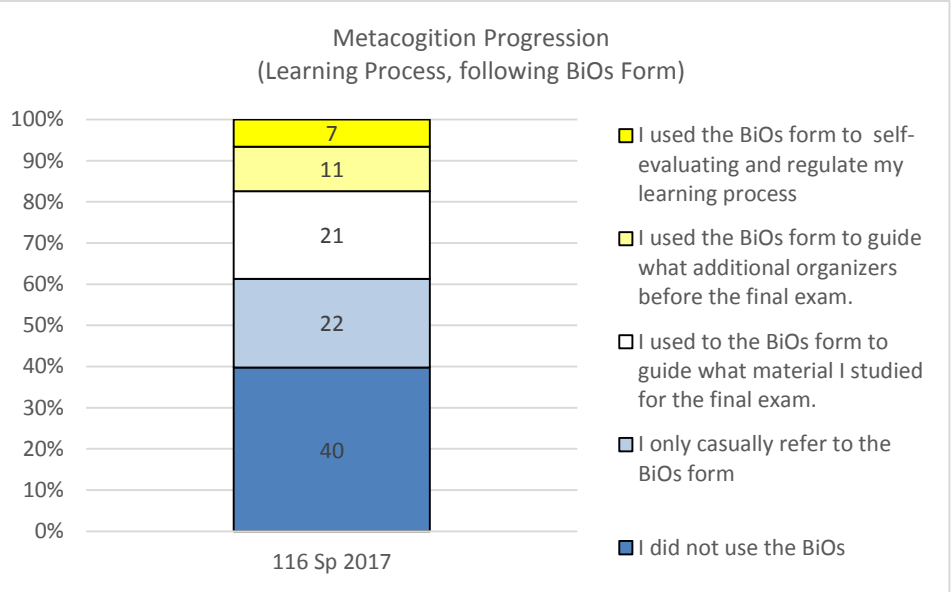
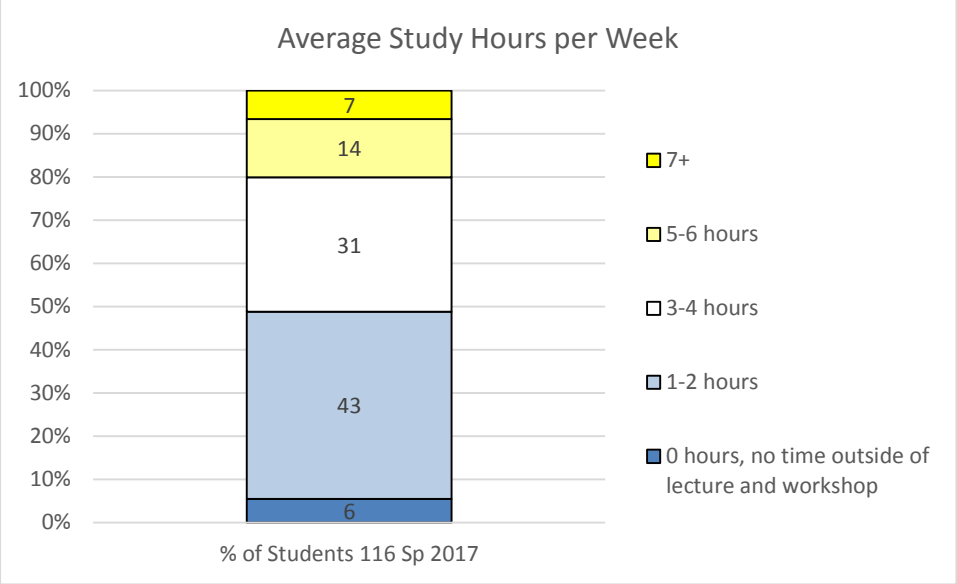




Appendix E: Biological Sciences Assessment Report







To empower the undergraduate achievement of our revised SLOs, the BSP is committed to student development in three fundamental areas.

a. Metacognition: Metacognition is the process of monitoring, reflecting and recalibrating one's knowledge of a given topic and/or the learning process. Metacognitive ability results in self-regulating learners who can adjust their learning practice from the use of feedback to help them adapt to their changing environment. These skills can facilitate the transition from high school to college and enable students to progress through the university to graduation. Since metacognition is a coveted talent for citizen in a changing, global and information based society and economy, the ability to learn new knowledge and practices, further prepares our undergraduates for life following graduation.

b. Team Skills: Like metacognition, team skills not only optimize the achievement of SLOs, they are desired abilities in the workplace. Increasing efficiency Team skills allow groups to breakdown large and complicated tasks. Teams provide their members exposure to different perspective, and they allow their individuals opportunities to draw on the distributed knowledge of the other members. The engagement feedback and social support increases student motivation and persistence. Teams allow for increased opportunities to activity discuss and constructing information. They also provide feedback opportunities to members.

c. Career Exploration: Students are encouraged to address career planning as a process of monitoring, reflecting and recalibrating one's objective and sets of current knowledge and skill and/or career development process. The integration of career exploration in the BSP allows students to connect their academic experience with the workplace nurturing greater motivation in the classroom. Its development in the early years of school can result in early engagement in research and internship opportunities providing competitive advantages for their career placement.

Training thousands of students through the BSP, these learning opportunities are embedded in our experiential based laboratory and workshop sessions. Although well-developed skills in these three areas are uncommon among incoming undergraduates and require additional time, effort, and cognitive commitment to

address, the course structure and activities help students maturate into self-regulating, adaptive and resilient learners able to navigate various academic and career challenges.

3. Faculty Engagement in Process Improvement : The development of an aligned curriculum, SLOs and measurements along with the commitment to student development in of metacognitive, team, and career planning skills has produced an organizational shift in structure and culture among the BSP's faculty. New faculty roles and responsibilities have been defined and assigned. New procedures, weekly faculty/staff planning meeting and comprehensive teaching assistant trainings have been established. The program also captures weekly qualitative feedback from their workshop and laboratory sessions on students' perception of the content and teaching assistants' perception on the effectiveness of the learning activities. Combining these new practices with annual debriefing session focuses on administrative procedures add greater context for strategizing for improvements. Like the student experience the alignment of these separate projects provides coherency and transparency for faculty. For the faculty, the establishment of new SLOs that are closely linked to content, measurements and SLGs help create a systems view of education allowing them to understand the impact and relationship of these elements on each other. The benefits of the contextualization of these elements into a system enhances the ability of faculty to identify problems and implement improvements in the system following various forms of evaluation/feedback. More importantly a systems view of learning has fostered regular faculty discussions on student learning. This has resulted in the normalization of the process of continuous improvement for student learning and fostered a professional learning community committed to student achievement and the improvement of teaching and learning of biological science.

EXTENDING PROGRAM ALIGNMENT & FACULTY ENGAGEMENT

The BSP has reached out to their stakeholders who share an interest in the persistence of biological science students throughout the Rutgers University community. Initiating a larger conversation about the coordination of content, SLOs and student persistence, the BSP hopes to share its experience in large scale reform and seek partners for future collaboration. Many BSP faculty actively participate in SAS Office of Stem Education and the Active Learning Community. Some of the courses the BSP have been in contact with are general physics, organic chemistry, histology, immunology, system physiology and introduction to environmental ecology. Other key stakeholders the BSP has collaborated with in regards to student persistence are the School of Arts and Science's Office of Undergraduate Education, Office of Academic Affairs and the Math and Science Learning Center, the School of Environmental and Biological Science Office of Academic Affairs, Student Access and Educational Equity, Rutgers University Residence Life and Rutgers University Athletics Academic Support. In regards to career exploration, The BSP has worked with the Rutgers University Honors College, RU Pipeline, Aresty Research Center, Robert Wood Johnson Medical School and Rutgers University Career Services.

IMPACT: Student Experience, Learning & SAS Stakeholders

Collectively the changes of SLOs supported by revision in curriculum, assessment

Appendix E: Biological Sciences Assessment Report

	and teaching/learning materials and the commitment to student development in learning skills have improve the undergraduate learning experience at Rutgers University School of Arts and Sciences. The program It has also enhanced the undergraduate experience by creating a coherent, transparent and engaging learning environment. The BSP faculty increased: 1. Transparency by clarifying what skills students need to learn (SLOs), how to achieve these SLOs, the process of learning-to-learn, and measurements of SLOs. 2. Coherency between distinct content topics, content topics, SLOs, measurements and the process of learning, and the classroom to the workplace. 3. Active participation by implementing weekly workshops that require students to practice and develop active, collaborative and reflective learning practices. During these sessions student receive formative feedback of their current level of competency of SLOs and their progress of exam preparation. And experience with the process of science through the remodeling of the laboratory to require student teams to apply the practice by the design, execution and presentation of the result of experiment. Overall, the program changes have fostered a culture of learning that improves the preparation of our undergraduates for life after college by placing a greater emphasis on the ability to continuously adapt to a changing environment with critically thinking, problem solving, team and self-regulating skills. Furthermore, the changes have improved the transition from high school into the University and enabled students to progress to graduation. These improvements of the School of Arts and Science undergraduate learning experience ultimately services the numerous stakeholders in the Rutgers University community. Students benefit from maximizing their learning experience with the expertise of the School of Arts and Science faculty. They also benefit from the preparation they undergo for life after graduation. SAS faculty benefit from the increase interest in the classroom and research laboratories. Local industries benefits from an improved pool of competent and qualified candidates who can immediately contribute to their organizations. The federal and state governments gains productive graduates who are able to contribute to our society and economy while capable of reimbursing their student loans. The School of Arts and Science benefits from the strengthening of its reputation for innovation, education, and empowerment of students to achieve their personal aspirations.
Most Significant Challenge	*Describe the most significant challenge you have faced this year in developing and implementing changes in the assessment process/plan, or in the curriculum.* <u>Misalignment</u> with other courses and support programs related in biological sciences 1. <u>Culture Shift</u> – issues of faculty and TA development, collaboration and alignment needed to be addressed. A common language for learning, content and assessment needs continued refinement. 2. <u>Curriculum Development</u> – significant effort to improved alignment of outcomes, instruction, measurement and learning activities, breadth versus depth considerations and coherency between content areas has been needs

	continued refinement. 3. Student Development – processes and activities to assist students with their high school-college transition, understanding of active, reflective and collaborative learning needs continued refinement. Scale – processes and procedures to logistically and equitably deliver the courses to over 2000 students at time with multiple faculty and upwards of 50 teaching assistants needs continued refinement. Development of the new lab and workshop – goals and measurements, policies and procedures, training materials, exam development, and implementation of technology needs continued refinement.
	Please describe any additional resources or support services you would like to have to facilitate your assessment efforts in the future. **Opportunity to collaborate and align on curriculum and student development**
Additional Data That Would be Helpful Going Forward	*Please describe any additional data or information you would like to have to facilitate your assessment and improvement efforts in the future.* We would like to have the following data at the beginning of the term for 119:115, 119:116: • RUID • Gender • Ethnicity • Unit of matriculation/school • Math placement • English placement • Chemistry placement • Students who retake GB 115 and 116 • SAT Combine • SAT Math • SAT verbal • AP credits • Class year • Social economic status We would also like to have the following: • Alumni employment survey • Survey data regarding study habits **In addition we are seeking data that will help us determine the following:** How do students who received an "F" or "D" in 199 fair in 115 and 116?

Appendix E: Biological Sciences Assessment Report

	How do students who received an "F" or "D" in 115 and/or 116 fair in the in all majors with the Division of Life Science and the School of Environmental Biological Sciences. What is the percentage of students who place out of General Biology who major in a life science? How does that compare with the percentage of students who complete General Biology? What are the majors of graduates who only completed 119:115? What are the majors of graduates who only completed 119:115 &119:116? What are the majors of students who complete 119:115, 119:116 & 119:117? What is the relationship of initial placement in English, mathematics and chemistry on students' grades in General Biology and completion of the Biology program major? What is the relationship among the common courses often simultaneously taken with General Biology (English, chemistry and mathematics)? What are the strongest combination of courses in regard to student achievement and retention? Is it better for students to complete some set of these course before, with, or after GB? What are the study habits of student on campus? How do they change overtime? What are the study habits of student with SAT scores less than 1000? How do they change overtime?

Attachments:

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School of Arts and Sciences

2016-17 SAS Annual Assessment Report

Appendix F: Psychology Assessment Report

Department: Psychology

Submitted by: Linnea R. Dickson Date: 6/15/17

Assessment Committee/ Working Group	Karin Stromswold (UVC); David Wilder (Advisor); Linnea Dickson (Assoc. UVC)

This report is on the assessment of:

x	Major - please specify:	Psychology
	Minor - please specify:	
	Other - please specify:	

Program *(Major, Minor)* Learning Goal(s)	Attached
URL for Learning Goals on Dept. Website	http://psych.rutgers.edu/requirements-major-honors-major-minor/176-major-requirements14?showall=&start=2
Learning Goals Statement(s) on Syllabi/Synopses	More than half All SAS Core Certified courses display SAS core goals on their syllabi
Where/ How Are Program Learning Goals Achieved?	Through completion of major requirements, except for civic engagement which is offered through optional fieldwork and internship courses.
How are Program Learning Goals Assessed?	Students taking a 400-level, capstone, course during the Spring semester are given a multiple choice assessment covering major, selected, topics from all areas of the major. Course selection information is also collected. (Students are asked to indicate which courses they took to fulfill core area and lab requirements as well as any optional fieldwork or internship experiences.) Participation is not mandatory and scores are not used toward the students' grades, etc.
How Are these Outcomes Measured?	Assessment attached. Benchmarks: Outstanding: 80%+ Good:70-79% Satisfactory:50-69% Unsatisfactory:<50% Note: Because of the nature of the psychology major, for most students there will likely be at least one or two questions derived from content covered in a

	course they did not take. Therefore we do not expect even outstanding students to be able to answer every question.
Summary Of Program Assessment Results For This Academic Year	Overall results (n=149): Outstanding: 6.8% Good: 19.7% Satisfactory:47.6% Unsatisfactory: 25.9% BSN core content: 85% of students scored Satisfactory or above 29% Outstanding Clin core content: 67% of students scored Satisfactory or above 9% Outstanding Cog area content: 75% of students scored Satisfactory or above 13% Outstanding Soc area content: 77% of students scored Satisfactory or above 16% Outstanding Stats/Design content:65% of students scored Satisfactory or above 21% Outstanding (The above data are largely similar to last year's.) 22% of surveyed students report participating in at least one semester of research in psychology. (Comparable to last year.) 11% of surveyed students report taking a psychology fieldwork course. (Comparable to last year.) 32% of surveyed students report taking at least one psychology internship course. (Continuing upward trend from last year.) Free response questions summary: Students continue to report their biggest challenges in completing the major to be the large classes and getting into the lab or 400-level class they wanted. Internship courses are frequently named as the most memorable/useful course our students have taken. Similarly, many students mention that they were disappointed that they were not able to take an internship course. Transfer students often mention difficulty taking advantage of research or internship opportunities.
Use of Results; Plan for Going Forward	In addition to the two recitation sections of Quant Meth that we added this year (in order to try to cap section size to 40 or below) we will be adding a hybrid QM course (with its own recitation), developed and taught by a faculty member with past success designing online courses. Partly in response to the results of the QM assessments and Stats/Research

Appendix F: Psychology Assessment Report

	Methods portion of our program assessment, we have developed a new 300 – level course (Exploring the Science of Perception and Cognition) with the aim of offering students additional exposure to and practice with research design and methodology, statistical methods, and writing up and presenting their findings. (Quant Methods and a lab course are pre-reqs.) Depending on how well it goes, it may become the model for similar courses within our other core areas (BSN, Clinical, and Social).
Schedule for Going Forward	We hope to see an increase in the percentage of students scoring in the Satisfactory range or above in QM in the next few years.
Maintenance/Updating of Learning Goals and/or Assessment Process	Review/updating of program assessment questions. Core goal assessment for new advanced lab course (Exploring the Science of Perception and Cognition) including possible pre- and post- course assessment of research methods and stats knowledge/skills (similar to those in program assessment).
Other Course/Curricula Evaluations or Reforms in Which Your Faculty Is Engaged, If Any	Nothing new to report here.
Most Significant Challenge	The size of our major, and the number of sections (and therefore instructors) involved in the assessments. The variety of courses our students can take on the way to completing the major makes designing a single, coherent program assessment difficult.
Additional Resources and Services	Increased communication/cooperation with Career Services to help us keep track of recent grads and what they're doing could be very useful. We do not have a great deal of concrete information regarding what kinds of fields our grads are going into. This could also help inform our assessments (what content/skills do our grads need?).

Appendix F: Psychology Assessment Report

Additional Data	Same as last year: "Post-graduation data (graduate school, employment, etc). Generally, an ability to track students through the major. Including questions like: Who are the students who declare psychology as their major late (2nd semester junior or later)? Are they drop-outs from other majors? Or students who took several psychology courses out of interest who decide to take a few more courses in order to add psychology as a second major? Were they closed out of the specific lab course or Quant. Methods section they wanted? Are they different in meaningful ways from students who begin the major on time? What percent of students taking the online section of 830:101 go on to be majors? How well do they do in the major? (And how do these compare to our standard sections?) Same questions for students using AP to place out of 101."

Attachments:

Psych Learning Objectives.docx
Psychology Program Assess S17.docx

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2016-17 SAS Annual Assessment Report

Appendix G: History Assessment Report

Department: History

Submitted by: Melissa Feinberg Date: May 25, 2017

Assessment Committee/ Working Group	***Faculty who are responsible for leading your department/program efforts on assessment of the major(s), minor(s), and other curriculum and courses.*** Melissa Feinberg, Bayo Holsey, Temma Kaplan, Kathleen López, Jennifer Mittelstadt, Camilla Townsend

This report is on the assessment of:

√	Major - please specify:	Major
	Minor - please specify:	We do not assess the minor because it does not have a structured curriculum (there are no required courses for completing the minor).

Program *(Major, Minor)* Learning Goal(s)	Conceptual Learning Goals. Students who study History at Rutgers University can expect to develop an understanding of the following concepts: C1.) The role of human agency in bringing about change in society and institutions. This includes: • understanding how individuals are shaped by their own past and by the past of their society and institutions • the role of diversity and difference in shaping human experience C2.) The operation of large-scale forces responsible for causing change over time, such as politics, economics, and religion. Practical Learning Goals. Students who study History at Rutgers University can expect to develop the following practical skills: P1.) The ability to read and understand a variety of historical primary sources such as archival documents, diplomatic correspondence, journalistic reports, and private papers P2) The ability to reach and understand secondary sources written in academic prose and to understand the substance of historiographical debates P3.) The ability to analyze information effectively and to use different kinds of historical sources to create a persuasive historical argument. P4.) The ability to write persuasively and communicate effectively P5.) The ability to work independently and to conduct independent research
URL for Learning Goals on Dept. Website	http://history.rutgers.edu/undergraduate/learning-goals
Learning Goals Statement(s) on Syllabi/Synopses	About half

Appendix G: History Assessment Report

Where/ How Are Program Learning Goals Achieved?	Our major's learning goals have been formulated to encompass the fundamentals of historical thinking, research and writing. They are at the center of virtually every course we teach. It would be misleading to tie individual goals to specific courses, or even levels of courses, given that the learning goals of the major permeate the entire curriculum. The History major has only two required courses: the History Workshop (506:299), ideally taken as students enter the major, and a research seminar in which students write an 18- to 25-page paper based on primary research (506:401/402). These courses are taught on specific topics that vary from semester to semester and from instructor to instructor. No matter the particular subject matter, both courses are meant to focus on the practical learning goals for the major, particularly the skills needed to do independent research. (Goals P1—P5). However, History courses at all levels teach students how to interpret and analyze different kinds of historical sources and to communicate their ideas clearly and effectively, so it is impossible to point to even these two required courses as "most directly" requiring students to master these skills. All History majors must take 12 History courses that include: two global history courses, two US history courses and two European history courses, one course that focuses on the period before 1500 C.E., five courses at the 300-level or above (these courses require considerable reading, writing and engagement with historical debates), the History Workshop (506:299), and a 400-level research seminar.
How are Program Learning Goals Assessed?	We use the final paper in the required research seminar to assess achievement in the major. This paper is scored using the attached program rubrics.
How Are these Outcomes Measured?	The rubric and scoring sheet used by seminar instructors to evaluate the research papers from their seminar are attached at the end of this report.
Summary Of Program Assessment Results For This Academic Year	We changed our assessment process in the middle of the 2016–2017 academic year (at the urging of the SAS assessment committee). The following is therefore based on a sample of 49 History majors from 6 seminars: Goal C1: Outstanding—53%; Good—33%; Satisfactory—12%; Unsatisfactory—2% Goal C2: Outstanding—48%; Good—38%; Satisfactory—12%; Unsatisfactory—2% Goal P1: Outstanding—55%; Good—30%; Satisfactory—11%; Unsatisfactory—4%

	Goal P2: Outstanding—45%; Good—35%; Satisfactory—18%; Unsatisfactory—2% Goal P3: Outstanding—51%; Good—35%; Satisfactory—12%; Unsatisfactory—2% Goal P4: Outstanding—45%; Good—29%; Satisfactory—24%; Unsatisfactory—2% Goal P5: Outstanding—57%; Good—29%; Satisfactory—12%; Unsatisfactory—2%
Use of Results; Plan for Going Forward	As we changed our assessment process this year, we need at least another year to be able to evaluate its usefulness. The first indications have been positive. As part of our new process, we have organized meetings of the current and future semester's seminar instructors at the end of every semester to talk about the issues they have faced. These discussions have proved quite useful to the faculty concerned. At the meeting of the Spring 2017 and Fall 2017 seminar instructors (held on May 2, 2017), there was a consensus that the History Workshop course, which became part of our major curriculum in 2014, was already showing positive results. We instituted this class to better prepare students for the rigors of the capstone research seminar. Faculty teaching the seminar in Spring 2017 found that those students who had been through the History Workshop were better prepared to undertake the independent research required in the seminar. Because the History Workshop course is new and yet becoming already so important for student success in the seminar, we decided to devote part of a faculty meeting in the fall (with the permission of the department chair) to a general discussion of the History Workshop course and its function in the major. The goal of this discussion will be to come to a consensus about the goals of this course as they have evolved since the course was instituted in 2014, and also to ensure greater consistency in course design with regard to the particular research skills that are taught. Looking at the most recent results of the major assessment (above), a large majority of students are achieving all of the learning goals at a level of "outstanding" or "good." The learning goal with the smallest percentage of students achieving one of those levels is P4, "The ability to write persuasively and communicate effectively." This goal is also the one that is the broadest and less connected specifically to history as a discipline. The relative lack of achievement on this goal can be attributed not only to the History major curriculum itself, but also the changing skill levels of entering students. Still, this is an area in which all History faculty may need to be more proactive going forward. We may no longer be able to assume that our students know how to structure a sentence or organize a paragraph. Dealing with this new reality will

	not be a quick or easy adjustment, but it is an area for future attention.
Timeline/ Schedule for Going Forward	We plan a meeting to discuss the goals of the History Workshop course in fall 2017. We will also continue to organize regular meetings of all faculty who teach the research seminar.
Maintenance/Updating of Learning Goals and/or Assessment Process	In response to feedback from the SAS assessment committee, this fall the Undergraduate Education Committee met to examine the department's process for assessing the major and consider a new assessment plan drafted by the Undergraduate Vice Chair (Melissa Feinberg). The UEC decided to simplify the major's learning goals in order to be able to assess them directly (previous assessments had used the criteria for the SAS Core WCR goal) and approved a new assessment plan. The new plan is as follows: 1.) Assessment will focus on the capstone seminar (506:401/402), required of all majors in either their junior or senior year. All seminars require an 18–25 page research paper, which will be the basis for the assessment. 2.) Assessment of the major's conceptual and practical learning goals will be carried out by a committee composed of that year's capstone seminar instructors, led by the Undergraduate Vice Chair. 3.) The UVC will meet with the current and future semester's seminar instructors at the end of each semester to discuss expectations for the seminars in light of the experiences of the current semester. 4.) Each semester, the seminar instructors will assess the completed papers in their seminar using the History Dept rubric for departmental learning goals. 5.) The UVC will compile the data from the assessments and share the results with the seminar instructors and ask for any additional feedback on them. The final report will be made available to the entire department.
Other Course/Curricula Evaluations or Reforms in Which Your Faculty Is Engaged, If Any	At the beginning of the fall semester, we launched a self-study of our undergraduate curriculum. This effort was not intended to concentrate on the major or minor, but to think about the curriculum as a whole (over half of our enrollments are not History majors) and consider how we might better serve the needs of undergraduate students from across the university. A committee was created to spearhead this project. We began by collecting information (such as we could) about enrollment trends. We also interviewed Deans Lenore Neigeborn and Julie Traxler from the SAS Advising staff. We then used this information to inform a series of discussions held by faculty within different regional and topical fields (U.S., European, African/African-Diaspora, Asian,

	Latin American, women's and gender history) to think about their undergraduate curriculum. One emphasis of all of these conversations was to think about creating more 100- and 200-level courses on broad topics that could be taught by a range of faculty and so offered more consistently. (Other than a few general surveys and the seminar and History Workshop courses, most History courses are proposed and taught only by one faculty member, which means that when a faculty member is on leave or in an administrative role, those classes are simply not taught). For example, the women's and gender history faculty decided to create two new courses: "Sex and Power" and "Witchcraft and Magic" that could be taught by instructors from a wide-range of different fields. The European history faculty is considering a course on fascism and anti-fascism. At future meetings of the self-study committee, we plan to take up some issues related specifically to the major, including our system of major advising.
Most Significant Challenge	One particular challenge has been the volatility of enrollments. Enrollments dropped significantly in Fall 2016 and the trend has continued. The drop in enrollments has been most notable for courses in non-Western history, but is true across the board, regardless of class level or subject. As just one example, in Spring 2017, 3 of the 6 scheduled research seminars required for majors were in danger of being cancelled, forcing us to open them to non-majors (we did not assess the work of the non-majors in these courses). It is challenging to schedule courses when we no longer know which classes will be in danger of cancellation. One difficulty is how to think about the introductory survey courses in this new climate, for example, the 2-semester 100-level U.S. history survey, the 2-semester 100-level European history survey, etc. In the past, these were large lecture courses (enrolling primarily non-majors), but now, they can have very small numbers. If this trend holds, we will need to think carefully as a department about the function of these courses in the curriculum. Another significant issue, particularly in the research seminar course, is how the financial pressures many students face impede their ability to succeed. Students who feel compelled for financial reasons to take 5 or 6 classes a semester and also work 30-40 hours a week complain that they literally do not have time to go to the library to do the research necessary for completing a seminar paper. While this issue is most pronounced in the seminar, it is a factor across the curriculum. A large percentage of students who fail courses do so simply because they fail to complete the work, not because they have turned in work that is sub-standard. We do not want to lower our standards and expectations; indeed, we see are convinced we need to emphasize the skills of writing and research in our classes. Yet, we also need to figure out how to best serve the needs of students who do face these kinds of challenges.

Appendix G: History Assessment Report

Additional Resources and Services That Would be Helpful Going Forward	There is nothing that seems applicable at this time.
Additional Data That Would be Helpful Going Forward	It would be useful to conduct an exit-survey with graduating History majors and minors to learn what students found most challenging and most rewarding about the curriculum.

Attachments: Seminar instructor assessment worksheet; rubric for assessing departmental learning goals

History Seminars 506: 401, 402
Assessment Reporting Worksheet