General Education SLOA Summary

General Education Category_ **Physical and Life Science** _ Semesters: _**SU 17/FA 17/SP18**

Data Summary: ***(See chart attached)***

- In **Academic Year 2018** (SU 17, FA17 and SP18), there were **27** general education (Gen Ed) science courses offered (Biology = **11**; Biotechnology = **2**; Chemistry = **3;** Physical Science **7**; Physics **5** were offered beginning FA17. A set of general education assessment questions has been developed for **most** of these courses and these assessments were administered with final exams for SU 17, FA 17, and SP 18 semesters to most of the sections of students completing these courses.
- A total of **2543** students registered for these **27** Gen Ed courses and **2124** students completed these courses which is **83.5%** of the registered students.
- General Education assessments are included in all General Education Science Courses. Data collected has not yet been imported into the "Einstein" database for analysis. Note: the Gen Ed assessment is not the same as the common course assessment.

What is being assessed?

All of the General Education assessments were designed to measure scientific reasoning as defined by the following learning outcome for the Physical and Life Science general education area:

The ability to access, process, analyze and synthesize scientific information

The assessments are usually 5 – 10 multiple choice questions which involve reading a case study or paragraph filled with data or solving a problem using course content. They were developed by the course instructors and are included with the final exam or embedded in exams during the course.

- All general education science courses have some end of course (or embedded in the course) assessment measuring scientific reasoning. The assessments are graded by the course instructors and results were submitted using the Einstein database.
- The Einstein database was used to collect course data for the first time at the end of SP2015. Because of the glitches the Helllo Einstein is now just used to generate the spreadsheets used to report the SLOA data.
- Previous to Einstein, data was submitted by instructors to the Y drive on their COGS for FA 2013 and SP 2014. The data was then accessed by the Division Office Associate and Division Chair, a process that requires each COG be checked in order to complete this report. This was a time-consuming process which should have been shortened tremendously by the implementation of the Science Assessment Database, "Einstein". The data is being collected for Einstein but due to data inconsistencies the reporting feature is only displays limited collated data and numbers.
- Specific issues with the relationship between Gen Ed assessment process and COGS includes:
    - All courses have a Common Course Assessment which all sections of the course take. This is required of **all** courses, not just Gen Ed courses.
    - All Gen Ed courses have another assessment, called the Gen Ed assessment, and this is required IN ADDITION to the Common Course Assessment.
    - Some courses still have too many learning outcomes and they are redundant. This needs to be cleaned up because the course learning outcomes have to be aligned with Program learning Outcomes which then need to be aligned with Institutional Learning Outcomes. New ISLOs were received by the Division Director in September 2017. None

of this can be cleaned up and finalized unless the course level outcomes are appropriate and measurable.
    - To "close the loop" on a specific content or skill area of a course or program, an item analysis must be done. This is what is not happening across the division.
- The database project that faculty are working on with R. Kendrick will solve most of the course level problems and issues. The Einstein database still has glitches (some due to data reporting inconsistencies) and requires B. Shepherd to do the import from Datatel. The SLOA spreadsheets returned and saved on the Y drive have not been imported into Einstein. This year's data was calculated using Excel instead via the Einstein database.
- Because in most cases, assessment questions have **not** been aligned with the stated learning outcome for the content area (Physical and Life Sciences), this will be on the agenda for the upcoming workshops when full-time and some adjunct faculty are present.
- CAAP Exams in Scientific Reasoning are planned for alternate academic years. The last administration was 2015. (75 students in BIO 113, BIO 101L. HCC mean score = 61.8 ± 3.4 vs. National mean score = 59.1± 4.2 (N=15966). The exam will be administered again in FA 2017 to approximately 100 Gen Ed math students and 100 Gen Ed science students (BIO 113 and CHM 101). The administration of these exams requires Testing Center staff oversight because there are many rules which must be enforced or risk jeopardizing the scores. This was a problem this fall of 2015.
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Discussion of Analysis Results: (narrative in Word format of **who, what, where, when, what** was discussed and what was determined)

Who: Full-Time faculty have completed Gen Ed Assessments for all of their courses which satisfy Gen Ed requirements. For courses taught only by adjunct faculty, these instructors have developed and implemented assessments. These adjunct instructors have been contacted and given directions on what is needed and when the assessment should be implemented. These assessments are stored in a file on the Middle States folder on the desktop of the Division Chair. The plan is to move them to the Y drive in FA 2015.

What: **96.2%** of the **AY 2018** Gen Ed courses in the Science area administered assessments to more than **1898** students during the final exam periods in summer 2017, fall 2017, and spring 2018. Without data from each instructor it is impossible to know how many of the course completers actually completed the course and how many were "walk away F s"(250). This is because we do not have an administrative withdrawal for students who stop coming to class and they are considered "retained".

This was **9.66%** of the Science Gen Ed enrollees (250/2543) for 2018 but it was 11.7% of the Science Gen Ed completers (250/2124). The assessments measured how well students achieved the Gen Ed Learning Outcome ***The ability to access, process, analyze and synthesize scientific information.***

The BIO 104 (now BIO 204) assessment is benchmarked by the HAPS exam. THE CHM 103 and 104 courses were benchmarked with the ACS exam for General Chemistry I and II and the CHM 203 and 204 courses are benchmarked by the corresponding ACS exam for Organic Chemistry.

Where: The assessments were administered in the classroom as supplements to final exams or in the Testing Center if the final exam was given in the Testing Center, including the online sections of BIO 110, BIO 106, BIO 117, CHM 101, PHS 105, PHS 108, PHS 109 and PHS 113. CAAP testing is done in the Testing Center or in an approved classroom in order to meet the stringent requirements of the ACT.

When: Most of the assessing for both semesters was done during the final exam period. Analysis of the data was not done at the end of the semester because we were waiting to get "Einstein" functional.

WHY: This whole SLOA process is done to increase student learning and this is a weak spot in the process, at least in this division. We are finally getting data from every Gen Ed course, but item analyses are not included very often on the COGS. With the new database, this will be addressed by linking the questions on the assessments to the Gen Ed expected learning outcomes for the Science Area. This should bring the Science course level assessment to a whole new level in this initiative. Once the linkage occurs (as was done with math several years ago) the outcomes can be linked to program outcomes and assessment of program outcomes at the course level will have some meaning.

Plan of Action: (closing the loop)

- Develop and update the Einstein Course database for Spring 2019.
- Analyze 2018 data and find at least ONE weak content area for every Gen Ed course that should be address in the delivery of the course for 2019.
- These changes should be made to course content or course design as described on the COGS for each course.
- More benchmark assessments should be identified and used in at least one course in each discipline.
- For disciplines where there is no normed assessment available, faculty are encouraged to work with another college

Gen Ed Course	Avg % on Gen Ed Skills	Avg % on Final Exam	Gen Ed Assessment	Avg GPA	17SU, 17/FA &18/SP Active	17SU, 17/FA &18/SP Complete	17SU, 17/FA &18/SP Success	F/AU	Withdrawal
BIO 101	discontinued								
BIO 102	discontinued								
BIO 103	discontinued - now as BIO 203								
BIO 104	discontinued - now as BIO 204								
BIO 106	71.18	75.25	5 Question BIO	2.46	169	147	127	19	3
BIO 110	62.6	64.55	5 Question BIO	2.55	347	278	258	19	24
BIO 111	67	77.8	5 Question BIO	3.06	18	15	15	2	1
BIO 112	discontinued			2.03	21	14	13	4	3
BIO 113	71	72	5 Question BIO	2.37	126	102	87	12	12
BIO 114	63	76	5 Question BIO	2.54	53	52	52	1	0
BIO 116	46.55	61.03	5 Question BIO	2.55	111	85	72	12	16
BIO 117	offered as Essence Only			3.66	3	3	3	0	0
BIO 119	72.22	76.57	5 Question BIO	2.02	119	94	79	17	9
BIO 201		76.3	none	2.08	15	11	8	1	3
BIO 202			Taught by Allied Health faculty	3.20	25	25	25	0	0
BIO 203	77.7	72.13	5 Question BIO	2.57	228	190	167	28	17
BIO 204	76.3	67.7	HAPS	2.74	182	157	151	11	14

BIO 205	64.85	84	5 Question Micro	3.16	187	178	172	3	5
BIO 206			5 Question Bio	2.98	22	21	21	0	0
BTC 101	84.15	84.75	5 Question BTC	3.57	37	37	36	0	0
BTC 102			InnovaBio on Campus	3.73	13	12	11	1	0
BTC 103			none	3.21	40	37	35	1	1
BTC 201			none	3.44	9	9	9	0	0
BTC 202		95	none	3.67	7	6	6	0	0
BTC 269			Internship	4.0	7	6	6	0	1
BTC 270			Internship II	4.0	2	2	2	0	0
CHEM 101	61.42	66.04	8 question CHM	2.52	331	259	221	53	18
CHEM 103	76.8	34.1	8 question CHM	2.14	127	98	78	23	10
CHEM 104	71	35.25	8 question CHM	2.10	63	50	33	11	7
CHM 107	discontinued								
CHM 203			8 question CHM	2.70	10	10	10	0	0
CHM 204			8 question CHM	1.82	11	10	8	0	1
EGR 103		72.5	none	2.61	32	27	26	3	2
EGR 108	not reported		none	2.50	20	18	16	0	2
EGR 203		69.5	none	2.29	14	11	10	3	0
EGR 204			none	2.0	6	3	3	1	1
EGR 206	new course – running in FA18		none						
EGR 208			none	2.0	4	3	3	1	0
EGR 210	new course began FA17		none	3.5	4	4	4	0	0
ENV 101	new course not yet offered		none						
ENV 201		78.7	none	4.0	2	2	2	0	0

ENV 202	offered as Tutorial	66.5	none	3.5	2	2	2	0	0
ENV 203	new course not yet offered		none						
ENV 204	new course not yet offered		none						
PHS 104	56.8	66.36	5 Question PHS	2.47	35	30	26	2	3
PHS 105	67.42	73.36	5 Question PHS	2.50	33	25	24	6	2
PHS 107	74.28	78.85	5 Question PHS	2.07	17	14	9	2	2
PHS 108	not offered on a consistent basis		5 Question PHS						
PHS 109	54.59	74.86	7 question PHS 109	3.07	86	75	75	7	4
PHS 111	73.75	76.81	5 Question PHS	2.64	8	8	8	0	0
PHS 113	74.25%	77.70 %	5 Question PHS	2.67	23	18	18	3	2
PHY 106			Taught by Allied Health Faculty	3.13	32	31	31	0	1
PHY 112	78.07	82.28	4 Questions PHY	2.57	14	14	13	0	0
PHY 201	76.45	76.34	4 Questions PHY	2.40	81	64	57	10	7
PHY 202	79.12	73.92	4 Questions PHY	2.72	26	26	21	1	0
PHY 203	79.01	81.03	4 Questions PHY	2.52	38	32	26	5	4
PHY 204	78.04	68.56	4 Questions PHY	2.76	27	25	23	0	1

PHY 205	79	70.14	4 Questions PHY	2.47	18	14	13	1	3
Totals GenEd					2543	2124		250	