SUNY CANTON

Science Department
School of Science, Health and Criminal Justice
Fall 2015 Assessment Report

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What was assessed? Student learning outcomes list:

- * SLO 1 – Scientific Methods
  - Students are expected to show an understanding of the methods scientists use to explore natural phenomena, including observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, and employment of mathematical analysis

- * SLO2 – Scientific Knowledge
  - Students are expected to apply knowledge of scientific data, concepts, and models in one of the natural sciences

Where were the outcomes assessed?

- SLO 1 & SLO 2
    - ASTR 101
    - ASTR 102
    - BIOL 101
    - BIOL 150
    - BIOL 209
    - BIOL 217
    - BIOL 325
    - BIOL 335

    - CHEM 100 & 101
    - CHEM 150
    - ESCI 101
    - PHYS 115
    - PHYS 121 & 125
    - PHYS 131 & 135
    - PHYS 133 & 137

How was the assessment accomplished?

- Student work assessed:
  - Objective one was assessed using a 15 questions multiple-choice test addressing the scientific method.
  - Objective two was assessed using course embedded questions on the final exam.
- Sample size:
  - Objective one - There were 683 students assessed and 66 % met or exceeded standards
  - Objective two - There were 770 students assessed and 62% met or exceeded standards

Actual assessment data

Course	Enrolled	Assessed	Exceeding	%	Meeting	%	Approaching	%	Not Meeting	%	TOTAL
Table 1. GER 2 Assessment data for Outcome 1 and 2 for 2014-2015.											
ASTR 101 & 102											
Outcome 1	9	4	1	**25**	0	**0**	0	**0**	3	**75**	100
Outcome 2	9	9	3	**33**	1	**11**	1	**11**	4	**44**	100
BIOL 101											
Outcome 1	189	166	27	**16**	40	**24**	43	**26**	56	**34**	100
Outcome 2	189	189	38	**20**	79	**42**	66	**35**	6	**3**	100
BIOL 150											
Outcome 1	88	51	28	**55**	13	**25**	7	**14**	3	**6**	100
Outcome 2	88	87	33	**38**	33	**38**	21	**24**	0	**0**	100
BIOL 209											
Outcome 1	69	55	31	**56**	12	**22**	11	**20**	1	**2**	100
Outcome 2	69	69	35	**51**	22	**32**	12	**17**	0	**0**	100
BIOL 217											
Outcome 1	121	107	47	**44**	28	**26**	23	**21**	9	**8**	100
Outcome 2	121	110	17	**15**	24	**22**	42	**38**	27	**25**	100
BIOL 325											
Outcome 1	26	23	23	**100**	0	**0**	0	**0**	0	**0**	100
Outcome 2	26	26	22	**85**	3	**12**	0	**0**	1	**4**	100
BIOL 335											
Outcome 1	23	18	11	**61**	7	**39**	0	**0**	0	**0**	100
Outcome 2	23	23	10	**43**	13	**57**	0	**0**	0	**0**	100
CHEM 100 & 101											
Outcome 1	112	53	11	**21**	13	**25**	18	**34**	11	**21**	100
Outcome 2	112	104	7	**7**	17	**16**	48	**46**	32	**31**	100
CHEM 150											
Outcome 1	101	85	49	**58**	23	**27**	6	**7**	7	**8**	100
Outcome 2	101	76	31	**41**	13	**17**	17	**22**	15	**20**	100
ESCI 101											
Outcome 1	32	32	26	**81**	2	**6**	2	**6**	2	**6**	100
Outcome 2	32	32	19	**59**	5	**16**	6	**19**	2	**6**	100
PHYS 115											
Outcome 1	35	35	10	**29**	7	**20**	6	**17**	12	**34**	100
Outcome 2	35	34	14	**41**	13	**38**	2	**6**	5	**15**	100
PHYS 121 & 125											
Outcome 1	61	29	12	**41**	6	**21**	5	**17**	6	**21**	100
Outcome 2	61	56	21	**38**	19	**34**	14	**25**	2	**4**	100
PHYS 131 & 135											
Outcome 1	19	14	9	**64**	4	**29**	1	**7**	0	**0**	100
Outcome 2	19	19	13	**68**	4	**21**	1	**5**	1	**5**	100
PHYS 133 & 137											
Outcome 1	11	11	10	**91**	1	**9**	0	**0**	0	**0**	100
Outcome 2	11	12	10	**83**	2	**17**	0	**0**	0	**0**	100
TOTALS											
Outcome 1	896	683	295	**43**	156	**23**	122	**18**	110	**16**	100
Outcome 2	896	846	273	**32**	248	**29**	230	**27**	95	**11**	100
Overall % exceeding or meeting the standards:											
Outcome 1 (Scientific Method)		**66**									
Outcome 2 (Course Outcomes)		**62**									

Actual assessment data

Table 2.Percent of students in different courses meeting or exceeding expectations for Outcome 1 and 2 for fall 2014.										
Course	Outcome 1	Outcome 2								
ASTR 101 & 102	25	44								
BIOL 101	40	62								
BIOL 150	**80**	**76**								
BIOL 209	**78**	**83**								
BIOL 217	**70**	37								
BIOL 325	**100**	**96**								
BIOL 335	**100**	**100**								
CHEM 100 & 101	45	23								
CHEM 150	**85**	58								
ESCI 101	**88**	**75**								
PHYS 115	49	**79**								
PHYS 121 & 125	62	**71**								
PHYS 131 & 135	**93**	**89**								
PHYS 133 & 137	**100**	**100**								
Total	66	62								

Actual assessment data

Table 3. Percent of students in different level courses meeting or exceeding expectations for Outcome 1 and 2 for fall 2014.											
Course level	Outcome 1	Outcome 2									
Intro level	47	51									
Upper level	80	68									

Assessment results: What have the data told us?

- These results both fell short of the 70% goal set for both outcomes.

- As has been found in previous assessments, there is a large difference between introductory and upper-level courses (Table 3) with introductory courses falling short of the goal and upper level courses mostly meeting the goal.

- This difference is mostly likely due to two factors:
  - 1) many of the introductory students are underprepared, and
  - 2) repeated exposure to science coursework through upper-level courses improves outcomes.

Data-driven decisions

- The standard of 70% of students meeting or exceeding outcomes one and two will be maintained.

- Additionally, the science faculty will be reviewing the assessment instruments between now and the next cycle and making recommendations for improvements for future assessment cycles.

- Specific issues to be discussed and resolved are:
  - 1) revision of outcome 1 questions and revision of what is taught in GER 2 classes (ie scientific method and statistical testing),
  - 2) random selection of students to be assessed to more easily avoid the problem of reassessment.
  - 3) how to move toward an ongoing assessment rather than a three year cycle,
  - 4) how to utilize TaskStream for the GER2 Assessment.

What resources were used or have been requested to close the loop?

- We will be using time of faculty members to redesign the assessment methods. No resources are requested at this time.