

Colorado State University – Pueblo Academic Program Assessment Report for AY 2014-2015

Due: June 1, 2015

Program: Chemistry-BS

Date: 05/22/15

Completed by: Chad Kinney

**Assessment contributors (other faculty involved in this program’s assessment):**

Please complete this form for each undergraduate, minor, certificate, and graduate program (e.g., B.A., B.S., M.S.) in your department. Please copy any addenda (e.g., rubrics) and paste them in this document, and submit it to the dean of your college/school as per the deadline established. The dean will forward it to me as an email attachment before June 2, 2014. You’ll also find the form at the assessment website at <http://www.colostate-pueblo.edu/Assessment/ResultsAndReports/Pages/default.aspx>.

Please describe the 2014-2015 assessment activities for the program in Part I. Use Column H to describe improvements planned for 2015-2016 based on the assessment process. In Part II, please describe activities engaged in during 2014-2015 designed to close-the-loop (improve the program) based on assessment activities and the information gathered in 2013-2014. Thank you.

**I. Program student learning outcomes (SLOs) assessed in this cycle, processes, results, and recommendations.**

| A. Which of the program SLOs were assessed during this cycle? Please include the outcome(s) verbatim from the assessment plan. | B. When was this SLO last assessed? Please indicate the semester and year.      | C. What method was used for assessing the SLO? Please include a copy of any rubrics used in the assessment process.                         | D. Who was assessed? Please fully describe the student group(s) and the number of students or artifacts involved.               | E. What is the expected achievement level and how many or what proportion of students should be at it? | F. What were the results of the assessment?   | G. What were the department’s conclusions about student performance?  | H. What changes/improvements to the program are planned based on this assessment?   |
|--|---|---|---|--|---|---|---|
| 1: Demonstrate knowledge of chemical concepts and theories   | Data are collected at the end of every semester. SLO was assessed in June 2014. | Evaluation of the results of the American Chemical Society Nationally normed final exams in each core course. When norms are not available, | All students taking core chemistry courses (401 students, not necessarily all unique since students may take more than one core | The average student should be at or above the 50 <sup>th</sup> percentile.                             | For most courses student performance was near to the 50 <sup>th</sup> percentile, and in many cases above the 50 <sup>th</sup> percentile. There are a few notable exceptions. First, all trailer sections, which are commonly populated by students who were | Overall student performance and demonstrated knowledge of chemical concepts is inline with or above the national norms for students enrolled in the on sequence courses. However, | If available, it would be advisable to provide additional resources (student services) for trailer sections. This would only be applicable to CHEM 121, 122, 301, and 302. Using the proven model supported by the Propel Program for their SAFE courses would be |

|                                      |                                  |   |                                |                                  |  |  |   |
|--------------------------------------|----------------------------------|---|--------------------------------|----------------------------------|--|--|---|
| 2: Demonstrate Problem Solving Skill | Data are collected at the end of | The Major Field Achievement Test (MFAT) and | Senior chemistry majors taking | The average student should be at | Results of ACS subject exams are assessed with SLO   | Seniors demonstrated a level of achievement  | No changes are deemed necessary at this time.   |
|                                      |                                  | previous versions' norms were substituted.  | course in a particular year).  |                                  | previously unsuccessful in the course, performed below the 50 <sup>th</sup> percentile. In some instances the same instructor taught the same course twice during the 2014-15 AY. In these cases the on sequence course performed above the 50 <sup>th</sup> percentile and the trailer section performed below the 50 <sup>th</sup> percentile. Second, students in CHEM 221 (inorganic chemistry) performed below the 50 <sup>th</sup> percentile. However, the course content covers only 70% of the material on the ACS exam. Most universities teach inorganic chemistry at the 300 or 400 level, which would be more consistent with exam content. Students taking advanced inorganic chemistry (CHEM 421) at CSU-Pueblo scored at a class average in the 77 <sup>th</sup> percentile. This same trend was observed during the previous AY. Results from the ACS exams during the most recent AY as well as previous years is included with this report. | there is a consistent dropoff in the class average on ACS exams in the trailer sections, which may reflect the fact that these courses are populated by a higher percentage of students who have previously been unsuccessful (DWF) in the course than the on sequence sections. | advisable. Since the SAFE model approach requires additional time and effort on the part of the instructor, this would require a reduction in other teaching responsibilities for the faculty member teaching the course. Therefore, either the addition of faculty members to the department or funding for temporary faculty positions (VAP, Lecturer, or Adjunct) would be necessary to pilot such an approach. It would also require additional SI and course specific tutoring resources, which have traditionally be provided from sources outside of the department. Given the need for financial resources to pilot such an approach, it will be discussed with the Dean to assess feasibility. |

|   |   |  |   |   |  |  |   |
|---|---|--|---|---|--|--|---|
|   | every semester. SLO was assessed in June 2014.                                  | ACS exams.   | the Chem 493 Seminar class (4 students). Unfortunately, the MFAT was not given to the Fall 2013 seminar students due to a miscommunication with a new seminar instructor. | or above the 50 <sup>th</sup> percentile.                     | #1. The MFAT scores of seniors (68 <sup>th</sup> percentile - cumulative) was well above the national mean. In addition, the seniors scored well above the national average in each subject area. Current AY and historical MFAT scores are included with this report. | exceeding the the expectation for this SLO.  |   |
| 3: Evaluate, write and present chemical topics from the literature. | Data are collected at the end of every semester. SLO was assessed in June 2014. | All attending faculty evaluate the senior seminar (CHEM 493) using a common rubric. Copy of the rubric is included with this report. | Senior chemistry majors   | All students should be at or above 70% on the scoring rubric. | All but two students were at or above the 70 <sup>th</sup> mark on their first attempt (n=13). One of these two students met the expected level of achievement upon a second attempt in CHEM 493.  | Generally speaking student performance was at or above the expected level of achievement. The two students that were unsuccessful in their first attempt in CHEM 493, the primary assessment tool for this SLO, because they did not complete the course and neglected to withdraw from the course. So their score in CHEM 493 did not accurately assess this SLO. | No changes are deemed necessary at this time. |

Comments: As noted in the assessment report from last year, CHEM 221 was increased from a 2 credit course to a 3 credit course beginning this past fall, which is inline with the national norm for inorganic chemistry. Although still below the 50<sup>th</sup> percentile, the performance on the inorganic chemistry ACS exam, increased 25 percentile from the previous year giving some indication of a positive effect from increased contact time.

**II. Follow-up (closing the loop) on results and activities from previous assessment cycles. In this section, please describe actions taken during this cycle that were based on, or implemented to address, the results of assessment from previous cycles.**

| A. What SLO(s) did you address? Please include the outcome(s) verbatim from the assessment plan. | B. When was this SLO last assessed? Please indicate the semester and year.      | C. What were the recommendations for change from the previous assessment?  | D. Were the recommendations for change acted upon? If not, why? | E. What were the results of the changes? If the changes were not effective, what are the next steps or the new recommendations? |
|--|---|--|---|---|
| 2. Demonstrate Problem Solving Skill   | Data are collected at the end of every semester. SLO was assessed in June 2014. | Changes in the monitoring and collection of the data are needed, especially when switching instructors. The chair will make a more concerted effort to communicate the assessment requirements for the seminar course to all instructors through the use of a common syllabus template. -- 2013-14 AY Assessment | Yes   | Appropriate assessment data was collected during the most recent AY.  |

Comments:

**American Chemical Society Standardized Final Examination Data**  
**Year 2004-present**  
**Academic**

| ACS Final<br>(Exam name & year) | Semester | Raw Score Average |           |     |       | Percentile Average |     |      |  |
|---------------------------------|----------|-------------------|-----------|-----|-------|--------------------|-----|------|--|
|                                 |          | U.S.              | Std. Dev. | N = | CSU-P | Std. Dev.          | N = | U.S. |  |

| General Chemistry Exams |  |                   |           |     |       |                    |     |      |       |
|-------------------------|--|-------------------|-----------|-----|-------|--------------------|-----|------|-------|
|                         |  | Raw Score Average |           |     |       | Percentile Average |     |      |       |
|                         |  | U.S.              | Std. Dev. | N = | CSU-P | Std. Dev.          | N = | U.S. | CSU-P |

|   |             |       |       |      |       |       |    |      |      |      |        |
|---|-------------|-------|-------|------|-------|-------|----|------|------|------|--------|
| 1st term (2000) DL                        | Su 05       | 39.6  | 11    | 11   | 41.3  | 11.3  | 16 | 51   | 56   | 5    | 80     |
| 1st term (2000) LW                        | Fall 04     | 39.6  | 11    | 11   | 44    | 14    | 58 | 51   | 65   | 14   | 812    |
| 1st term (1997)LW                         | Fall 05     | 39    | 11    | 2000 | 39    | 12    | 63 | 51   | 48   | -3   | -189   |
| 1st term (1997)LW                         | Fall 06     | 39    | 11    | 2000 | 42    | 11    | 38 | 51   | 57   | 6    | 228    |
| 1st term (2000)LW                         | Fall 07     | 40    | 11    |      | 39    | 12    | 73 | 48   | 48   | 0    | 0      |
| 1st term (2005)LF                         | Fall 08     | 40    | 12    | 4524 | 38    | 10    | 56 | 48   | 45   | -3   | -168   |
| 1st term (2000)RF                         | F08         | 39.6  | 11    |      | 33.8  | 9.8   | 15 | 51   | 33   | -18  | -270   |
| 1st term (2000) DL                        | Su 07       | 39.6  | 11    |      | 39.1  | 10.4  | 16 | 51   | 49   | -2   | -32    |
| 1st term (2000) DL                        | Su 08       | 39.6  | 11    |      | 42.9  | 13.2  | 19 | 51   | 61   | 10   | 190    |
| 1st term (2000) DL                        | Su 09       | 39.6  | 11    |      | 45.9  | 15.1  | 10 | 51   | 70   | 19   | 190    |
| 1st term (2005) CK                        | Spring 2010 | 40.35 | 12.26 | 4524 | 32.05 | 10.91 | 65 | 60   | 28   | -22  | -1430  |
| 1st term (2009) KP                        | F10         | 37.1  | 11.4  | 3827 | 38.2  | 12.2  | 33 | 51   | 54   | 3    | 222    |
| 1st term (2009) RF                        | Su 10       | 40.35 | 12.26 | 4524 | 45.08 | 11.09 | 22 | 50   | 63   | 13   | 286    |
| 1st term (2005) DL                        | Su 11       | 37.13 | 11.39 | 3827 | 36.8  | 10.3  | 26 | 51   | 50   | -1   | -26    |
| 1st term (2009) DD                        | Su 11       | 37.13 | 11.39 | 3827 | 33.9  | 11.2  | 78 | 51   | 41.8 | -9.2 | -717.6 |
| 1st term (2009) CC                        | F11         | 37.13 | 11.39 | 3827 | 33.9  | 11.2  | 78 | 51   | 41.8 | -9.2 | -717.6 |
| 1st term (2009) CC                        | Sp12        | 37.13 | 11.39 | 3827 | 34.3  | 10.7  | 90 | 51   | 42.9 | -8.1 | -729   |
| 1st term (2009) RF                        | F12         | 37.13 | 11.39 | 3827 | 37.1  | 9.1   | 71 | 51   | 50.5 | -0.5 | -35.5  |
| 1st term (2009) CC                        | Sp 14       | 37.13 | 11.39 | 3827 | 34.3  | 9.4   | 73 | 51   | 43.2 | -7.8 | -569.4 |
| 2nd term (2009) CC                        | Sp 14       | 37.13 | 11.39 | 3827 | 34.3  | 9.4   | 73 | 51   | 43.2 | -7.8 | -569.4 |
| General Chemistry I 2009 (rev. 2011)F2012 | F2012       | 37.13 | 11.39 | 3827 | 36    | 7.75  | 17 | 50   | 48   | -2   | -34    |
| General Chemistry I 2009 (rev. 2011)S2013 | Fall 2013   | 37.13 | 11.39 | 3827 | 33.92 | 9.7   | 83 | 50   | 42   | -8   | -664   |
| Gen. Chem. First Term 2009                | Fall 2013   | 37.13 | 11.39 | 3827 | 34.7  | 9.7   | 81 | 51   | 43.4 | -7.6 | -615.6 |
| 1st term (2009) CC                        | Sp 14       | 37.13 | 11.39 | 3827 | 34.3  | 9.4   | 73 | 51   | 43.2 | -7.8 | -569.4 |
| 1st Term Form 2009 Rev 2011 CC            | Fall 2014   | 37.13 | 11.39 | 3827 | 38.54 | 12.06 | 34 | 51.3 | 56   | 4.7  | 159.8  |
| First Term General Chemistry KP           | F2014       | 40.35 | 12.26 | 4524 | 44.08 | 10.91 | 26 | 50   | 61   | 11   | 286    |
| 1st term (2009) KP                        | Sp 2015     | 37.13 | 11.39 | 3827 | 34.1  | 12.2  | 61 | 51.3 | 42   | -9.3 | -567.3 |

|                               |             |       |       |      |       |       |    |    |      |      |        |
|-------------------------------|-------------|-------|-------|------|-------|-------|----|----|------|------|--------|
| Full year (1999) LW           | Spring 05   | 40.19 | 10.03 | 955  | 37.5  | 9.5   | 48 | 51 | 41   | -10  | -480   |
| Full year (1999) RS           | Fall 04     | 40.19 | 10.03 | 955  | 42    | 12.7  | 33 | 51 | 59   | 8    | 264    |
| Full year (1999) LW           | Spring 05   | 33.1  | 11    |      | 31.9  | 9.9   | 49 | 53 | 48.5 | -4.5 | -220.5 |
| Full year (1999) DD           | Su 05       | 40.19 | 10.03 | 955  | 34.6  | 7.6   | 22 | 51 | 35   | -16  | -352   |
| Full year (1999) RS           | Fall 05     | 40.19 | 10.03 | 955  | 43.4  | 10.8  | 34 | 51 | 62   | 11   | 374    |
| Full year (1999) LW           | Spring 06   | 40.19 | 10.03 | 955  | 37    | 11    | 41 | 51 | 39   | -12  | -492   |
| Full year (1999) LW           | Spring 06   | 33    | 10    |      | 33    | 11    | 39 | 53 | 53   | 0    | 0      |
| Full year (1999) DD           | Su 06       | 40.19 | 10.03 | 955  | 42.4  | 9.1   | 20 | 51 | 60   | 9    | 180    |
| Full year (2005) LW           | Sp 07       | 31.2  | 9.99  | 1858 | 32.2  | 9.5   | 47 | 52 | 43   | -9   | -423   |
| Full year (2005) LW           | Sp 07       | 31.2  | 9.99  | 1858 | 32.2  | 9.5   | 48 | 52 | 56   | 4    | 192    |
| Full year (2005) LW           | Su 07       | 35.5  | 11.5  | 1858 | 37.7  | 12.6  | 11 | 52 | 61   | 9    | 99     |
| Full year (2005) LW           | Sp 08       | 35.5  | 11.5  | 1858 | 34    | 11    | 27 | 51 | 48   | -3   | -81    |
| Full year (2005) LW           | Sp 08       | 31.2  | 9.99  | 1858 | 35    | 11    | 26 | 53 | 60   | 7    | 182    |
| Full year (2005) LW           | Sp 09       | 35.5  | 11.5  | 1858 | 36    | 11    | 31 | 51 | 54   | 3    | 93     |
| Full year (2005) LW           | Sp 09       | 31.2  | 9.99  | 1858 | 34    | 14    | 31 | 53 | 56   | 3    | 93     |
| Full year (2005) DL           | Su 08       | 35.5  | 11.5  | 1858 | 33    | 9.7   | 21 | 51 | 42   | -9   | -189   |
| Full year (2005) DL           | Fall 08     | 35.5  | 11.5  | 1858 | 34.1  | 16.4  | 23 | 51 | 48   | -3   | -69    |
| Full year (2005) CK           | Su 09       | 35.45 | 11.51 | 1858 | 36.85 | 14.09 | 20 | 51 | 58   | 7    | 140    |
| Full year (2005) DD           | Su10        | 35.45 | 11.51 | 1858 | 35    | 9.8   | 33 | 51 | 58   | 7    | 140    |
| Full year (2005) KP           | Fall 10     | 34.76 | 11.29 | 3201 | 34.07 | 10.9  | 41 | 51 | 51   | 0    | 0      |
| Full year (2005) DL           | Spring 11   | 35.5  | 11.5  | 1858 | 33.3  | 10.2  | 59 | 51 | 46   | -5   | -295   |
| General Chemistry, 2005 MC    | Fall 2012   | 35.45 | 11.51 | 900  | 30.5  | 10.33 | 45 | 51 | 35   | -16  | -220   |
| General Chemistry, 1999 MC    | Spring 2013 | 40.19 | 10.03 | 900  | 36.8  | 8.12  | 49 | 51 | 39   | -12  | -588   |
| Full year (2005) KP           | Fall 10     | 35.45 | 11.51 | 1858 | 31.88 | 10.28 | 41 | 51 | 42   | -9   | -369   |
| Gen. Chem. 2005 MC            | F2013       | 34.45 | 11.51 |      | 31    | 8.66  | 39 | 54 | 40   | -14  | -546   |
| Gen. Chem. Conceptual 2001 MC | Sp2014      | 31.25 | 9.99  |      | 32.7  | 8.6   | 41 | 51 | 56   | 5    | 205    |
| Gen. Chem. 2005 MC            | Sp2014      | 34.45 | 11.51 |      | 30.5  | 9.7   | 41 | 54 | 41   | -13  | -533   |

| Course                       | Term           | Score | Grade | Score | Grade | Score | Grade | Average | Total Students |
|------------------------------|----------------|-------|-------|-------|-------|-------|-------|---------|----------------|
| Gen. Chem. 1999 MC           | Fall 2014      | 40.19 | 10.03 | 32.65 | 8.55  | 42    | 42    | 51      | 30.4           |
| Gen. Chem. 2001 (Concept) MC | Fall 2014      | 31.25 | 9.99  | 42    | 17.6  | 41    | 41    | 51      | 30.4           |
| Gen. Chem. 2005 MC           | Spring 2015    | 34.45 | 11.51 | 35.97 | 10.18 | 35    | 35    | 48      | 51.2           |
| Gen. Chem. 2001 (Concept) MC | Spring 2015    | 31.25 | 10.0  | 34    | 7.3   | 34    | 34    | 51      | 60             |
| Pre-General Chemistry        |                |       |       |       |       |       |       |         |                |
| 0                            | Average        |       |       |       |       |       |       |         |                |
| 0                            | Total Students |       |       |       |       |       |       |         |                |
| 2383                         | Average        |       |       |       |       |       |       |         |                |
| 0                            | Total Students |       |       |       |       |       |       |         |                |
| Toledo (1998) DL             | Su 05          | 31.5  | 7.2   | 31.8  | 7.2   | 18    | 18    | 51      | 51             |
| Toledo (1998) DL             | Su 07          | 31.5  | 7.2   | 32.5  | 8.2   | 16    | 16    | 51      | 54             |
| Toledo (1998) DL             | Su 08          | 31.5  | 7.2   | 35.2  | 9.4   | 21    | 21    | 51      | 70             |
| Toledo (1998) DL             | Su 09          | 31.5  | 7.2   | 34.6  | 8.1   | 13    | 13    | 51      | 67             |
| Toledo (1998) RF             | F08            | 31.5  | 7.2   | 30.3  | 7.8   | 21    | 21    | 51      | 44             |
| Toledo (1998) DL             | F09            | 31.5  | 7.2   | 30.6  | 6     | 63    | 63    | 51      | 47             |
| Toledo (1998) RF             | F10            | 31.5  | 7.2   | 32    | 9.1   | 50    | 50    | 51      | 54             |
| Toledo (1998) DL             | Su10           | 31.5  | 7.2   | 32.7  | 6.4   | 28    | 28    | 51      | 58             |
| Organic Chemistry            |                |       |       |       |       |       |       |         |                |
| 0                            | Average        |       |       |       |       |       |       |         |                |
| 0                            | Total Students |       |       |       |       |       |       |         |                |
| 230                          | Average        |       |       |       |       |       |       |         |                |
| 0                            | Total Students |       |       |       |       |       |       |         |                |
| Organic 2002 DD              | F 04           | 43.28 | 11.83 | 34.2  | 7.7   | 18    | 18    | 48      | 23             |
| Organic 2002 DD              | S 05           | 43.28 | 11.83 | 36.3  | 7.3   | 37    | 37    | 48      | 29             |
| Organic 2004 DD              | F 05           | 39.22 | 12.16 | 3592  | 32    | 21    | 21    | 50      | 32             |
| Organic 2004 DD              | S06            | 39.22 | 12.16 | 3592  | 33.1  | 41    | 41    | 50      | 34             |
| Organic 2004 DD              | F06            | 39.22 | 12.16 | 3592  | 35.9  | 29    | 29    | 50      | 41             |
| Organic 2004 DD              | Sp07           | 39.22 | 12.16 | 3592  | 36.8  | 42    | 42    | 50      | 45             |
| Organic 2004 DD              | F07            | 39.22 | 12.16 | 3592  | 36.7  | 21    | 21    | 50      | 45             |
| Organic 2004 DD              | Sp08           | 39.22 | 12.16 | 3592  | 34.7  | 38    | 38    | 50      | 45             |
| Organic 2004 DD              | F08            | 39.22 | 12.16 | 3592  | 35.5  | 32    | 32    | 50      | 41             |
| Organic 2004 DD              | Sp09           | 39.22 | 12.16 | 3592  | 38.2  | 28    | 28    | 50      | 48             |
| Organic 2004 DD              | F09            | 39.22 | 12.16 | 3592  | 34.8  | 18    | 18    | 50      | 39             |
| Organic 2004 DD              | Sp10           | 39.22 | 12.16 | 3592  | 37.4  | 35    | 35    | 50      | 46             |
| Organic 2004 DD              | F12            | 43.28 | 11.83 | 34.3  | 9     | 12    | 12    | 51.3    | 24             |
| Organic 2004 DD              | Sp12           | 39.22 | 12.16 | 3592  | 41.1  | 38    | 38    | 50      | 55             |
| Organic Chemistry OR04 MD    | spring 2013    | 39    | 12.16 | 37.48 | 11.2  | 40    | 40    | 50      | 46.5           |
| Organic Chemistry 2004 DD    | Spring 2014    | 39.22 | 12.16 | 40.1  | 12    | 43    | 43    | 51      | 52.3           |
| Organic Chem 2004 MD         | F14            | 39.22 | 12.16 | 3592  | 8     | 25    | 25    | 51      | 25             |
| Organic 2004 DD              | Spring 2015    | 39.22 | 12.66 | 3592  | 38.2  | 39    | 39    | 50      | 47.7           |
| Organic 1st 2006 DD          | F06            | 37.83 | 9.81  | 33.8  | 9.2   | 48    | 48    | 50      | 37             |
| Organic 1st 2006 DD          | Sp07           | 37.83 | 9.81  | 31.6  | 6.5   | 24    | 24    | 50      | 28             |
| Organic 1st 2006 DD          | F07            | 37.83 | 9.81  | 33.4  | 9     | 54    | 54    | 50      | 35             |
| Organic 1st 2006 DD          | Sp08           | 37.83 | 9.81  | 29.6  | 7.2   | 35    | 35    | 50      | 22             |
| Organic 1st 2006 DD          | F08            | 37.83 | 9.81  | 36.3  | 7.9   | 50    | 50    | 50      | 46             |
| Organic 1st 2006 DD          | F09            | 37.83 | 9.81  | 37.7  | 8.9   | 58    | 58    | 51      | 51             |
| Organic 1st 2006 DD          | Sp10           | 37.83 | 9.81  | 32.6  | 8     | 29    | 29    | 51.3    | 31.8           |
| Organic 1st 2006 DD          | F10            | 37.83 | 9.81  | 35.6  | 9.9   | 47    | 47    | 51.3    | 43.4           |
| Organic 1st 2006 DD          | Sp12           | 37.83 | 9.81  | 35.2  | 10.4  | 28    | 28    | 51.3    | 43             |
| Organic 1st 2006 DD          | F11            | 37.83 | 9.81  | 36.3  | 9.6   | 58    | 58    | 51.3    | 51             |
| 1st Term Org Chem (OR06F) DD | spring 2013    | 37.83 | 9.81  | 39    | 8.19  | 34    | 34    | 51.3    | 55             |
| 1st Term Org Chem (OR06F) DD | fall 2012      | 37.83 | 9.81  | 38.2  | 10.7  | 65    | 65    | 51.3    | 53             |
| Organic 1st term 2010 ZL     | Sp 14          | 39.39 | 11.74 | 29.3  | 6.8   | 23    | 23    | 52.2    | 21             |
| Organic 1st term 2010 ZL     | Sp 14          | 39.39 | 11.74 | 29.3  | 6.8   | 23    | 23    | 52.2    | 21             |
| First term organic 2006 DD   | Fall 2013      | 37.83 | 9.81  | 37.3  | 10.3  | 48    | 48    | 51      | 49.1           |
| Organic 1st term 2010 DD     | Fall 2014      | 39.39 | 11.74 | 39.8  | 11.2  | 48    | 48    | 52      | 53             |
| Organic 1st 2006 MD          | Spring 2015    | 37.83 | 9.81  | 1560  | 32    | 24    | 24    | 51.3    | 30             |

| ACS Final   |       |           |       |                   |      |                    |      |                    |        |          |
|---|-------|-----------|-------|-------------------|------|--------------------|------|--------------------|--------|----------|
| (Exam name & year)  |       |           |       |                   |      |                    |      |                    |        |          |
| Semester  | U.S.  | Std. Dev. | N =   | Raw Score Average |      |                    | U.S. | Percentile Average | Raw    | Weighted |
|   |       |           |       | Raw Score Average | U.S. | Percentile Average |      |                    |        |          |
| <b>American Chemical Society Standardized Final Examination Data</b><br><b>Year 2004-present</b><br><b>Academic</b> |       |           |       |                   |      |                    |      |                    |        |          |
| Total Students 1236   |       |           |       |                   |      |                    |      |                    |        |          |
| Average -11   |       |           |       |                   |      |                    |      |                    |        |          |
| Biochemistry 2003 SB  |       |           |       |                   |      |                    |      |                    |        |          |
| Spring 04   | 35.4  | 9.3       | 29    | 5.7               | 4    | 50                 | 26   | -24                | -96    |          |
| Spring 05   | 35.4  | 9.3       | 26    | 5.8               | 3    | 50                 | 17   | -33                | -99    |          |
| Spring 06   | 35.4  | 9.3       | 31    | 1                 | 3    | 50                 | 34   | -16                | -48    |          |
| Spring 07   | 32.9  | 8.9       | 24    | 2.7               | 3    | 53                 | 18   | -35                | -105   |          |
| Spring 09   | 32.9  | 8.9       | 30    | 4.1               | 7    | 53                 | 39   | -14                | -98    |          |
| Spring 10   | 32.9  | 8.9       | 38.5  | 4.5               | 4    | 53                 | 72   | 19                 | 76     |          |
| Spring 12   | 24.53 | 6.41      | 29.1  | 1.24              | 4    | NA                 | NA   |                    |        |          |
| Spring 13-UG  | 32.9  | 8.9       | 28.7  | 4.4               | 3    | 53                 | 36   | -17                | -51    |          |
| Spring 13-G   | 32.9  | 8.9       | 36.8  | 7                 | 5    | 53                 | 62   | 9                  | 45     |          |
| Spring 2014   | 32.9  | 8.9       | 34.1  | 8.14              | 10   | 53                 | 55.3 | 2.3                | 23     |          |
| Biochemistry 2007 SB  |       |           |       |                   |      |                    |      |                    |        |          |
| Spring 04   | 35.4  | 9.3       | 29    | 5.7               | 4    | 50                 | 26   | -24                | -96    |          |
| Spring 05   | 35.4  | 9.3       | 26    | 5.8               | 3    | 50                 | 17   | -33                | -99    |          |
| Spring 06   | 35.4  | 9.3       | 31    | 1                 | 3    | 50                 | 34   | -16                | -48    |          |
| Spring 07   | 32.9  | 8.9       | 24    | 2.7               | 3    | 53                 | 18   | -35                | -105   |          |
| Spring 09   | 32.9  | 8.9       | 30    | 4.1               | 7    | 53                 | 39   | -14                | -98    |          |
| Spring 10   | 32.9  | 8.9       | 38.5  | 4.5               | 4    | 53                 | 72   | 19                 | 76     |          |
| Spring 12   | 24.53 | 6.41      | 29.1  | 1.24              | 4    | NA                 | NA   |                    |        |          |
| Spring 13-UG  | 32.9  | 8.9       | 28.7  | 4.4               | 3    | 53                 | 36   | -17                | -51    |          |
| Spring 13-G   | 32.9  | 8.9       | 36.8  | 7                 | 5    | 53                 | 62   | 9                  | 45     |          |
| Spring 2014   | 32.9  | 8.9       | 34.1  | 8.14              | 10   | 53                 | 55.3 | 2.3                | 23     |          |
| Biochemistry 2012 SB  |       |           |       |                   |      |                    |      |                    |        |          |
| Physical Chemistry  |       |           |       |                   |      |                    |      |                    |        |          |
| P-Chem Comp. (1995) RS  |       |           |       |                   |      |                    |      |                    |        |          |
| Fall 04   | 31.3  | 9.2       | 442   | 35.0              | 1    | 53                 | 67   | 14                 | 14     |          |
| Fall 04   | 31.3  | 9.2       | 442   |                   |      | 53                 |      | -53                | 0      |          |
| Fall 04   | 21.3  | 7.1       |       |                   |      | 53                 |      | -53                | 0      |          |
| P-Chem Quant. (1995) RS   |       |           |       |                   |      |                    |      |                    |        |          |
| Spring 05   | 21.6  | 5.8       | 18.7  | 6.2               | 10   | 53                 | 34   | -19                | -190   |          |
| Spring 06   | 21.6  | 5.8       | 19.4  | 7.9               | 7    | 53                 | 40   | -13                | -91    |          |
| Fall 08   | 21.6  | 5.8       | 24.8  | 7.4               | 17   | 53                 | 63   | 10                 | 170    |          |
| Fall 09   | 21.6  | 5.8       | 24.9  | 6.9               | 13   | 53                 | 64   | 11                 | 143    |          |
| Fall 10   | 21.6  | 5.8       | 25.6  | 4.2               | 8    | 53                 | 69   | 16                 | 128    |          |
| Fall 12   | 21.6  | 5.8       | 28.9  | 6.1               | 10   | 53                 | 63   | 10                 | 100    |          |
| 2006 P Chem (Quantum)   |       |           |       |                   |      |                    |      |                    |        |          |
| F13   | 29.2  | 7.8       | 29.3  | 6.1               | 12   | 51                 | 49.7 | -1.3               | -15.6  |          |
| P-Chem Thermo. (1996) RS  |       |           |       |                   |      |                    |      |                    |        |          |
| Fall 04   | 21.3  | 7.1       | 20.6  | 4.3               | 8    | 53                 | 51   | -2                 | -16    |          |
| Fall 05   | 21.3  | 7.1       | 18.4  | 5.4               | 12   | 53                 | 40   | -13                | -156   |          |
| Spring 09   | 26.4  | 7.0       | 26.4  | 7.2               | 19   | 51                 | 51   | 0                  | 0      |          |
| Spring 10   | 26.4  | 7.0       | 28.2  | 8.8               | 18   | 51                 | 56   | 5                  | 90     |          |
| Spring 13   | 26.4  | 7.0       | 29.3  | 6.4               | 11   | 53                 | 61.8 | 8.8                | 96.8   |          |
| 2006 P Chem (Thermo)  |       |           |       |                   |      |                    |      |                    |        |          |
| S14   | 26.4  | 7.0       | 24.1  | 4.5               | 16   | 52                 | 40.7 | -11.3              | -180.8 |          |
| Spring 2015   | 26.4  | 7.0       | 26.7  | 7.6               | 14   | 51                 | 51.4 | 0.4                | 5.6    |          |
| CHEM 321  |       |           |       |                   |      |                    |      |                    |        |          |
| CHEM 322  |       |           |       |                   |      |                    |      |                    |        |          |
| P-Chem Thermo. (1996) RS  |       |           |       |                   |      |                    |      |                    |        |          |
| Fall 04   | 21.3  | 7.1       | 20.6  | 4.3               | 8    | 53                 | 51   | -2                 | -16    |          |
| Fall 05   | 21.3  | 7.1       | 18.4  | 5.4               | 12   | 53                 | 40   | -13                | -156   |          |
| Spring 09   | 26.4  | 7.0       | 26.4  | 7.2               | 19   | 51                 | 51   | 0                  | 0      |          |
| Spring 10   | 26.4  | 7.0       | 28.2  | 8.8               | 18   | 51                 | 56   | 5                  | 90     |          |
| Spring 13   | 26.4  | 7.0       | 29.3  | 6.4               | 11   | 53                 | 61.8 | 8.8                | 96.8   |          |
| 2006 P Chem (Thermo)  |       |           |       |                   |      |                    |      |                    |        |          |
| S14   | 26.4  | 7.0       | 24.1  | 4.5               | 16   | 52                 | 40.7 | -11.3              | -180.8 |          |
| Spring 2015   | 26.4  | 7.0       | 26.7  | 7.6               | 14   | 51                 | 51.4 | 0.4                | 5.6    |          |
| Inorganic Chemistry (CHEM 221)  |       |           |       |                   |      |                    |      |                    |        |          |
| P-Chem Thermo. (1996) RS  |       |           |       |                   |      |                    |      |                    |        |          |
| Spring 05   | 23.9  | 8         | 27.8  | 6.6               | 4    | 54                 | 69   | 15                 | 60     |          |
| Spring 12   | 28.4  | 8.1       | 31    | 0                 | 2    | 52                 | 66   | 14                 | 28     |          |
| F2013   | 31.79 | 8.95      | 482   | 7.98              | 18   | 51                 | 11.8 | -39.2              | -705.6 |          |
| Sp2014  | 31.79 | 8.95      | 482   | 7.5               | 7    | 51                 | 69.3 | 18.3               | 128.1  |          |
| Fall 2014   | 31.79 | 8.95      | 26.13 | 10.13             | 15   | 51                 | 37   | -14                | -210   |          |
| Spring 2015   | 31.79 | 8.95      | 39.8  | 7.5               | 5    | 51                 | 77   | 26                 | 130    |          |
| Total Students 51   |       |           |       |                   |      |                    |      |                    |        |          |
| Average 3   |       |           |       |                   |      |                    |      |                    |        |          |
| Analytical Chemistry (CHEM 317)   |       |           |       |                   |      |                    |      |                    |        |          |





Cumulative %tiles on Major Field Achievement Test

Institutional Performance  
%tile score

| Semester | # Students | number | Cumulative | Overall          |                  | Physical         |                  | Organic          |                  | Inorganic        |                  | Analytical       |                  | National Mean | Biochem | Crit Think |
|----------|------------|--------|------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|---------------|---------|------------|
|          |            |        |            | current yr %tile | cumulative %tile | current yr %tile | cumulative %tile | current yr %tile | cumulative %tile | current yr %tile | cumulative %tile | current yr %tile | cumulative %tile |               |         |            |
| S 1995   | 5          | 5      | 77         | 77               | 72               | 72               | 71               | 71               | 71               | 78               | 78               | 84               | 84               | 50            |         |            |
| S-1996   | 6          | 11     | 87         | 82               | 91               | 82               | 71               | 48               | 71               | 83               | 81               | 96               | 91               | 50            |         |            |
| S-1997   | 7          | 18     | 49         | 69               | 52               | 71               | 48               | 75               | 65               | 75               | 75               | 25               | 65               | 49            |         |            |
| AY 97-98 | 10         | 28     | 95         | 79               | 94               | 79               | 93               | 93               | 91               | 91               | 80               | 91               | 74               | 49            |         |            |
| AY 98-99 | 6          | 34     | 46         | 73               | 9                | 67               | 44               | 68               | 51               | 75               | 75               | 68               | 73               | 49            |         |            |
| AY 99-00 | 9          | 43     | 66         | 71               | 59               | 65               | 64               | 62               | 75               | 68               | 75               | 71               | 73               | 49            |         |            |
| AY 00-01 | 9          | 52     | 44         | 67               | 51               | 63               | 40               | 62               | 32               | 68               | 68               | 54               | 70               | 49            |         |            |
| AY 01-02 | 6          | 58     | 85         | 69               | 76               | 64               | 80               | 76               | 80               | 80               | 69               | 99               | 73               | 50            |         |            |
| AY 02-03 | 2          | 60     | 75         | 69               | 75               | 64               | 75               | 65               | 76               | 80               | 69               | 60               | 72               | 50            |         |            |
| AY 03-04 | 9          | 69     | 55         | 67               | 60               | 64               | 25               | 59               | 50               | 66               | 66               | 65               | 71               | 50            |         |            |
| AY 04-05 | 6          | 75     | 80         | 68               | 75               | 65               | 65               | 60               | 85               | 68               | 68               | 85               | 72               | 50            |         |            |
| AY 05-06 | 4          | 79     | 88         | 69               | 82               | 66               | 85               | 61               | 78               | 85               | 88               | 84               | 73               | 50            |         |            |
| AY 06-07 | 5          | 84     | 35         | 67               | 50               | 65               | 10               | 58               | 45               | 70               | 67               | 50               | 72               | 50            | 1       | 75         |
| AY 07-08 | 11         | 95     | 55         | 66               | 80               | 66               | 40               | 56               | 70               | 67               | 67               | 60               | 70               | 50            | 5       | 80         |
| AY 08-09 | 10         | 105    | 25         | 62               | 40               | 64               | 10               | 52               | 60               | 67               | 67               | 25               | 66               | 45            | 10      | 10         |
| AY 09-10 | 14         | 119    | 60         | 62               | 80               | 66               | 35               | 50               | 65               | 67               | 67               | 65               | 66               | 50            | 45      | 55         |
| AY 10-11 | 7          | 126    | 55         | 61               | 80               | 67               | 25               | 48               | 55               | 66               | 66               | 80               | 67               | 50            | 30      | 50         |
| AY 11-12 | 5          | 131    | 77         | 62               | 88               | 67               | 59               | 49               | 82               | 66               | 66               | 62               | 66               | 46            | 32      | 79         |
| AY 12-13 | 4          | 135    | 60         | 62               | 60               | 58               | 58               | 49               | 67               | 67               | 67               | 36               | 66               | 51            | 21*     | 60*        |
| AY 13-14 | 4          | 139    | 96         | 63               | 98               | 68               | 87               | 50               | 99               | 67               | 67               | 98               | 66               | 46            | 46*     | 58*        |
| AY 14-15 | 13         | 152    | 68         | 63               | 58               | 67               | 72               | 52               | 56               | 66               | 66               | 56               | 66               | 48            | 67      | 61         |

\*AY11-12 and 12-13 were combined to get a large enough N  
 \*AY12-13 and 13-14 were combined to get a large enough N

## Seminar Assessment & Comments

CHEM 493: Fall 2014

Seminar Score \_\_\_\_\_  
 Abstract (%) \_\_\_\_\_  
 100 point scale

Topic \_\_\_\_\_

Date \_\_\_\_\_

Student Presenter \_\_\_\_\_

Student Reviewer \_\_\_\_\_

The objective of the 50 minute talk is to illustrate the student's ability to coherently present information of a specific nature.

**Topic: (10 pts)** \_\_\_\_\_  
 Appropriateness of topic: narrow enough to include specific material while having breadth of interest? Is it sufficiently chemical in nature? Is it of general interest?

|    |    |   |   |   |   |   |
|----|----|---|---|---|---|---|
| A  | 10 | 9 | 8 | 7 | 6 | 5 |
| A- | 10 | 9 | 8 | 7 | 6 | 5 |
| B- | 10 | 9 | 8 | 7 | 6 | 5 |
| C- | 10 | 9 | 8 | 7 | 6 | 5 |
| D  | 10 | 9 | 8 | 7 | 6 | 5 |
| F  | 10 | 9 | 8 | 7 | 6 | 5 |

**Content: (35 pts)** \_\_\_\_\_  
 Is there sufficient chemistry in the presentation? Is the material presented relevant to the topic, correct, well-documented and current? Is it clearly and logically presented?

|    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|
| A  | 35 | 32 | 28 | 25 | 21 | 18 |
| A- | 35 | 32 | 28 | 25 | 21 | 18 |
| B- | 35 | 32 | 28 | 25 | 21 | 18 |
| C- | 35 | 32 | 28 | 25 | 21 | 18 |
| D  | 35 | 32 | 28 | 25 | 21 | 18 |
| F  | 35 | 32 | 28 | 25 | 21 | 18 |

**Organization: (20 pts)** \_\_\_\_\_  
 Does the introduction provide a good overview? Does each topic flow naturally from the previous one? Does the presentation "tell a story"? Is the material appropriate for the intended audience?

|    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|
| A  | 20 | 18 | 16 | 14 | 12 | 10 |
| A- | 20 | 18 | 16 | 14 | 12 | 10 |
| B- | 20 | 18 | 16 | 14 | 12 | 10 |
| C- | 20 | 18 | 16 | 14 | 12 | 10 |
| D  | 20 | 18 | 16 | 14 | 12 | 10 |
| F  | 20 | 18 | 16 | 14 | 12 | 10 |

**Presentation: (20 pts)** \_\_\_\_\_  
 Does the presenter maintain good eye contact, and use appropriate strength of voice, while engaging listeners?

|    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|
| A  | 20 | 18 | 16 | 14 | 12 | 10 |
| A- | 20 | 18 | 16 | 14 | 12 | 10 |
| B- | 20 | 18 | 16 | 14 | 12 | 10 |
| C- | 20 | 18 | 16 | 14 | 12 | 10 |
| D  | 20 | 18 | 16 | 14 | 12 | 10 |
| F  | 20 | 18 | 16 | 14 | 12 | 10 |

(40 min) Start time \_\_\_\_\_ Stop time \_\_\_\_\_

**Graphics, Diagrams, Figures: (10 pts)** \_\_\_\_\_  
 Do the visual aids supplement the presentation or are they superfluous? Do visual aids fit logically into presentation? Are they discussed in detail? Are they easy to read and follow?

|    |    |   |   |   |   |   |
|----|----|---|---|---|---|---|
| A  | 10 | 9 | 8 | 7 | 6 | 5 |
| A- | 10 | 9 | 8 | 7 | 6 | 5 |
| B- | 10 | 9 | 8 | 7 | 6 | 5 |
| C- | 10 | 9 | 8 | 7 | 6 | 5 |
| D  | 10 | 9 | 8 | 7 | 6 | 5 |
| F  | 10 | 9 | 8 | 7 | 6 | 5 |

**Use of Power Point: (5 pts)** \_\_\_\_\_  
 How well was the visual presentation put together? (general appearance, clarity, and legibility of slides; effective use of Power Point).

|    |   |   |   |   |   |
|----|---|---|---|---|---|
| A  | 5 | 4 | 3 | 2 | 1 |
| A- | 5 | 4 | 3 | 2 | 1 |
| B- | 5 | 4 | 3 | 2 | 1 |
| C- | 5 | 4 | 3 | 2 | 1 |
| D  | 5 | 4 | 3 | 2 | 1 |
| F  | 5 | 4 | 3 | 2 | 1 |

General Impressions:

## Chem 493: Seminar Assessment and Comments Rubric Categories

### Topic:

|         |   |
|---------|---|
| A Level | Topic is narrow enough to include specific material while having breadth of interest. Topic is highly chemical in nature. |
| B Level | Topic is good but either slightly too specific or too broad. Chemistry content is good.                                   |
| C Level | Topic is too broad and may not contain enough chemistry   |
| D Level | Topic contains little specific chemistry and is broad and non-specific or not appropriate for the audience.               |

### Content:

|         |  |
|---------|--|
| A Level | The presentation contains sufficient chemistry and is relevant to the topic, correct, well-documented and current. Excellent handling of post-seminar questions. Speaker exhibits an excellent command of the topic.   |
| B Level | The presentation contains a good amount of material with minimal tangents or dated material. Handled most post-seminar questions well. Speaker exhibits a good command of the subject with minimal corrections needed. |
| C Level | Presentation content is lacking significantly in one or more areas. Content questions handled erratically with additional preparation by the speaker needed to master the topic.                                       |
| D Level | Presentation had little to no chemistry and showed little preparation or documentation. Failure to address questions and speaker showed little to no understanding of topic.   |

### Organization:

|         |  |
|---------|--|
| A Level | Introduction provides a good overview and each topic flows naturally from the previous one. The presentation "tells a story" and at an appropriate level for the audience. Time management is excellent. |
| B Level | Introduction pertinent and attracted the audience's attention. A few transition problems and/or limited disorganization. Time management is good.  |
| C Level | The "story" is somewhat disorganized. Introduction, transitions and topic flow is not smooth or refined.   |
| D Level | No organization evident with the audience quite lost. Poor transitions and topic flow. Extremely poor time management.   |

### Presentation:

|         |   |
|---------|---|
| A Level | Presenter maintains excellent eye contact and appropriate strength of voice and engages the audience. Dress, posture pointer use and/or mannerisms are excellent. Speaks the presentation without reading slides. |
| B Level | In frequent problems with voice tone, eye contact, posture, pointer use and/or mannerisms. Appropriate attire and audience engagement. Limited reading of slides.   |
| C Level | Voice tone, eye contact, pointer use and/or mannerisms poor at times. Significant reading of slides. Attire and audience engagement needs improvement.  |
| D Level | Consistently poor voice, eye contact, pointer use and/or mannerisms to the point of distraction for the listeners. Presentation was read.   |

### Graphics, Diagrams, Figures:

|         |  |
|---------|--|
| A Level | Graphics, diagrams, figures and tables are all appropriate to the presentation, correct, discussed in detail and are easy to read and follow.  |
| B Level | Most graphics are readable and pertinent to the presentation and discussed adequately. Some modification/addition of graphical data would have made the presentation more effective. |
| C Level | Insufficient use of graphics, diagrams, figures, etc. Multiple visual aids difficult to read, insufficiently explained or superfluous to the presentation.                           |
| D Level | No visual aids presented when it would have been appropriate. Visuals presented are unreadable, illegible, inappropriate and/or not discussed.                                       |

### Use of PowerPoint:

|         |  |
|---------|--|
| A Level | All slides readable, attractive and well-organized. Color schemes/fonts appropriate and legible. Time spent on each slide appropriate. PowerPoint used as a tool for the presentation and not distracting from it. No typos or mistakes. |
| B Level | Most slides readable and generally follow presentation. Time spent on each slide could use slight improvement. Limited typos.  |
| C Level | Some slides not readable or clear. Time management of slides poor. Numerous typos and/or mistakes on slides.   |
| D Level | Overall slides not readable or clear and significant lack of organization on the slides evident. PowerPoint is a distraction rather than a presentation tool.  |