***STUDENT LEARNING ASSESSMENT PROGRAM SUMMARY FORM AY 2016-2017***

Please complete a separate worksheet for each academic program (major, minor) at each level (undergraduate, graduate) in your department. Worksheets are due to CASA this year by **June 15, 2017**. Worksheets should be sent electronically to [kjsanders@eiu.edu](mailto:kjsanders@eiu.edu) and should also be submitted to your college dean. For information about assessment or help with your assessment plans, visit the Assessment webpage at  [http://www.eiu.edu/~assess/](http://www.eiu.edu/%7Eassess/) or contact Karla Sanders in CASA at 581-6056.

**Degree and Program Name:**

Chemistry BA and BS

**Submitted By:**

Rebecca Peebles, Chair

# Please use size 10 font or larger. PART ONE

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| What are the learning objectives? | How, where, and when are they assessed? | What are the expectations? | What are the results? | Committee/ person responsible? How are results shared? |
| 1. Students will learn fundamental principles and applications in each of the major sub-disciplines in chemistry. | a) ETS Major Field Test administered to graduating seniors; b) item on exit survey for graduating seniors; c) item on alumni survey sent each year to 3-year and 8-year alumni | a) For each subtest, most examinees scoring at or > 50th percentile; b),c) average response ≥ 3 on 5-point scale where 5=strongly agree, 1=strongly disagree | a) % meeting expectation (of 9 students): Physical 56%, Organic 11%, Inorganic 22%, Analytical 33%; overall 56% at or above 50th percentile); b) Average = 4.7; c) Data not collected in 2016 and data collection still in progress for 2017. | Assessment Committee administers exam and surveys. Results examined by department chair and compiled by assessment  committee for sharing with department faculty and other committees (such as curriculum). |
| 2. Students will be able to critically analyze a breadth of chemical problems & experimental results. | a) Critical thinking component of Major Field Test; b) grades in CHM 2730; c) CHM 3460, presentation; d) item on exit survey for graduating seniors; e) item on alumni survey sent each year to 3-year and 8-year alumni | Mean % correct for each year  ≥ national mean; b) 75%  of majors receive grade of A or B in CHM 2730; c) 100% of  students with summary score of 40/50 on evaluation rubric; d), e) average response ≥ 3 on 5-point scale where 5=strongly agree, 1=strongly disagree | a) Mean % correct = 37% vs. national mean = 45%; b) 50% of majors received A or B; c) Data not available; d) Average = 4.8; e) Data not collected in 2016 and data collection still in progress for 2017 | Assessment Committee administers exam and surveys. Results examined by department chair and compiled by assessment  committee for sharing with department faculty and other committees (such as curriculum) |

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| 3.Students will be able to execute chemical experiments utilizing modern methods & equipment | a) Assignments in CHM 2845 (IR spectrometer), 3455 (UV/- VIS spectrophotometer), 3780 (chromatography), 3915 (NMR spectrometer), 4915 (inert atmosphere techniques); b) student research participation; c) item on exit survey for graduating seniors; d) item on alumni survey sent each year to 3-year and 8-year alumni | a) 100% of students successfully use specific equipment to acquire data and interpret the same with respect to its chemical significance (*e.g.* structure determination) or perform a specialized method in chemical synthesis essential to obtaining a desired product; b) 50% or more of graduating seniors complete a research project; c), d) average response ≥ 3 on a 5-point scale where 5=strongly agree, 1=strongly disagree | a) 2845: 100%, 3455: 100%,  3780: 100%, 3915: 100%,  4915: 100%; b) 73% (8/11  students SU16-SP17); c) Average = 4.8; d) Data not collected in 2016 and data collection still in progress for 2017 | Department chair collects course information and Assessment Committee administers surveys.  Information is shared with assessment committee and then communicated to appropriate (e.g. curriculum) departmental committees. |
| 4. Students will be familiar with computer applications in chemistry. | a) Assignments in CHM 2845, (NMR data handling), 3915 (modeling exp.); b) item on exit survey for graduating seniors; c) item on alumni survey sent each year to 3-year and 8-year alumni | a) 100% of students successfully complete specified assignment; b), c) average response ≥ 3 on 5- point scale where 5=strongly agree, 1=strongly disagree | a) 2845: 100%, 3915: 100%;  b) Average = 4.3; c) Data not collected in 2016 and data collection still in progress for 2017 | Department chair collects course information and assessment committee administers surveys.  Information is shared with assessment committee and then communicated to appropriate (e.g. curriculum) departmental committees. |
| 5. Students will be able to properly utilize chemical information sources | a) Assignment in CHM 3500 (use of electronic databases to find relevant chemical information); b) CHM 3001 & 4001: seminar evaluation; c) item on exit survey for graduating seniors; d) item on alumni survey sent each year to 3-year and 8-year alumni | a) 100% of students successfully complete assignment; b) CHM 3001: 100% of students with scores ≥ 2 on literature item; CHM 4001: same as for CHM 3001; c), d) average response ≥ 3 on 5-point scale where 5=strongly agree, 1=strongly disagree | a) 100%; b) 86% of students in CHM3001 and 4001 (combined) (12/14 students);  c) Average = 5.0; d) Data not collected in 2016 and data collection still in progress for 2017 | Department chair collects course information and assessment committee administers surveys.  Information is shared with assessment committee and then communicated to appropriate (e.g. curriculum) departmental committees. |

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| 6. Students will be able to apply the scientific method of investigation. | a) Student research activity; b) ACS review of sample research reports submitted as part of 5- year review of major. Reports selected from those submitted by majors enrolled in undergraduate research; c) item on exit survey for graduating seniors; d) item on alumni survey sent each year to 3-year and 8-year alumni | a) 50% or more of graduating majors complete a research project; b) positive review of reports by ACS; c), d) average response ≥ 3 on 5-point scale where 5=strongly agree, 1=strongly disagree | a) 73% (8/11 students SU16- SP17); b) ACS review report received FA16 and received positive feedback; c) Average = 5.0; d) Data not collected in 2016 and data collection still in progress for 2017 | Department chair collects course information and assessment committee administers surveys.  Information is shared with assessment committee and then communicated to appropriate (e.g. curriculum) departmental committees. |
| 7. Students will be able to communicate technical material effectively in speaking & writing | a) CHM 3001 & 4001: seminar evaluation; b) presentation in CHM 3460; c) writing assignments in CHM 3780 (final report) and 3915 (binary phase experiment report); d) item on exit survey for graduating seniors; e) item on alumni survey sent each year to 3-year and 8-year alumni | a) CHM 3001: 90% of students receive passing score on first attempt; CHM 4001: same as for CHM 3001; b) 100% of students with summary score of 40/50 on evaluation rubric;  c) 90% of students have scores  ≥ 70% on first attempt; d),e) average response ≥ 3 on a 5- point scale where 5=strongly agree, 1=strongly disagree | 1. 93% of students in CHM3001 and 4001 (combined) (13/14 students); 2. Data not available; c) 3780: 100%, 3915: 80% (4/5 students); d) Average (speaking) = 4.8, average (writing) = 4.7; e) Data not collected in 2016 and data collection still in progress for 2017 | Department chair collects course information and assessment committee administers surveys.  Information is shared with assessment committee and then communicated to appropriate (e.g. curriculum) departmental committees. |

(Continue objectives as needed. Cells will expand to accommodate your text.)

# PART TWO

During FY16 the department’s Assessment Committee was chaired by a faculty member who had not previously served on the committee. The result was that a considerable amount of data (most significantly, alumni surveys) that has been routinely collected in the past was not collected for FY16. In FY17, the Assessment Committee chair was returned to a faculty member who has significant experience in this role, and he is in the process of collecting data for FY17. In FY16 our Assessment Committee started work on finding ways to more effectively share assessment data with department faculty, but these efforts were not pursued by the committee chair. In FY17 departmental assessment efforts were turned towards what was required for the Vitalization process, and that has provided us with a lot of bigger picture ideas about where our department should be going, but it prevented much work related to improving our assessment of student learning. Moving into FY18, we plan to resume our efforts to develop an efficient way to share assessment data with relevant departmental constituents. In addition, several of the assignments and other measures of assessment included in the annual report are outdated, as course assignments have changed but our assessment plan has not. Another goal for FY18 is to bring our assessment plan up to date with what we are actually teaching, in order to ensure that the quantitative measures that are included in the report are actually useful towards measuring the stated goals.

# PART THREE

The most obvious changes to curriculum that have resulted from our assessment program are to the Science Teacher Certification program, where several non-Chemistry requirements have been changed over the years based on feedback from students about the content of their certification exams. We have also received confirmation of the value of some of the required but less “standard” (not required by all Chemistry programs at different universities) courses in our curriculum (the Junior/Senior Seminar sequence, CHM3000/3001/4000/4001, for example). This course’s format requires significant faculty input for no credit, and student exit interviews and alumni surveys indicate that students value the 2-year sequence, that scores improve from CHM3001 to 4001, and that students improve their spoken communication skills, as well as literature searching and presentation skills, as they proceed from CHM3001 to 4001. I believe that the biggest message from the numerical data in the FY17 and FY16 assessments is that the numbers of students meeting our desired standards, especially for Goals 1 and 2, are dropping. This may partly be a result of small data sets causing large variability from one year to the next, but we generally need to consider our curriculum and potentially whether there are adjustments that could be made that would help students to become better at problem solving and critical thinking. Our department is experiencing significant faculty turnover at present, and this seems like an excellent time to assess the degree to which we emphasize these softer skills, and how we incorporate them, throughout our courses.