***STUDENT LEARNING ASSESSMENT PROGRAM***

***SUMMARY FORM AY 2017-2018***

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, 2018**. Worksheets should be sent electronically to 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/> or contact Karla Sanders in CASA at 581-6056.

Chemistry BA and BS, Biochemistry BS

**Degree and**

**Program Name:**

# Submitted By:

Rebecca Peebles, Chair

**Please use size 10 font or larger.**

**PART ONE**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 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 learnfundamental principles andapplications in each of themajor sub-disciplines inchemistry. | a) ETS Major Field Testadministered to graduatingseniors; b) item on exit surveyfor graduating seniors; c) itemon alumni survey sent each yearto 3-year and 8-year alumni | a) For each subtest, mostexaminees scoring at or > 50thpercentile; b),c) averageresponse ≥ 3 on 5-point scalewhere 5=strongly agree,1=strongly disagree | a) % meeting expectation (of 4 students): Physical 50%, Organic 50%, Inorganic 50%, Analytical 50%; overall 50% at or above 50th percentile); b) Average = 4.3; c) 5.0 | Assessment Committeeadministers exam andsurveys. Resultsexamined by departmentchair and compiled by assessmentcommittee for sharing with department faculty and other committees (such as curriculum). |
| 2. Students will be able tocritically analyze a breadth ofchemical problems &experimental results. | a) Critical thinking componentof Major Field Test; b) grades inCHM 2730; c) CHM 3460,presentation; d) item on exitsurvey for graduating seniors; e)item on alumni survey sent eachyear to 3-year and 8-year alumni | Mean % correct for each year ≥ national mean; b) 75%of majors receive grade of A orB in CHM 2730; c) 100% ofstudents with summary scoreof 40/50 on evaluation rubric;d), e) average response ≥ 3 on5-point scale where 5=stronglyagree, 1=strongly disagree | a) Mean % correct = not enough data for ETS to assess; b) 75% of majors received A or B; c) 100%; d) Average = 4.3; e) 4.5 | Assessment Committeeadministers exam andsurveys. Resultsexamined by departmentchair and compiled by assessmentcommittee for sharing with department faculty and other committees (such as curriculum) |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 3.Students will be able toexecute chemical experimentsutilizing modern methods &equipment | a) Assignments in CHM 2845(IR spectrometer), 3455 (UV/-VIS spectrophotometer), 3780(chromatography), 3915 (NMRspectrometer), 4915 (inertatmosphere techniques); b)student research participation; c)item on exit survey forgraduating seniors; d) item onalumni survey sent each year to3-year and 8-year alumni | a) 100% of studentssuccessfully use specificequipment to acquire data andinterpret the same with respectto its chemical significance(*e.g.* structure determination)or perform a specializedmethod in chemical synthesisessential to obtaining a desiredproduct; b) 50% or more ofgraduating seniors complete aresearch project; c), d) averageresponse ≥ 3 on a 5-point scalewhere 5=strongly agree,1=strongly disagree | a) 2845: 100%, 3455: not taught in FY18, 3780: 100%, 3915: 100%, 4915: 100%; b) 66%; c) Average = 4.3; d) 4.0 | Department chair collectscourse information andAssessment Committeeadministers surveys.Information is sharedwith assessmentcommittee and thencommunicated toappropriate (e.g.curriculum) departmentalcommittees. |
| 4. Students will be familiarwith computer applications inchemistry. | a) Assignments in CHM 2845,(NMR data handling), 3915(modeling exp.); b) item on exitsurvey for graduating seniors; c)item on alumni survey sent eachyear to 3-year and 8-year alumni | a) 100% of studentssuccessfully completespecified assignment; b), c)average response ≥ 3 on 5-point scale where 5=stronglyagree, 1=strongly disagree | a) 2845: 100%, 3915: 100%; b) Average = 4.0; c) 3.5 | Department chair collectscourse information andassessment committeeadministers surveys.Information is sharedwith assessmentcommittee and thencommunicated toappropriate (e.g.curriculum) departmentalcommittees. |
| 5. Students will be able toproperly utilize chemicalinformation sources | a) Assignment in CHM 3500(use of electronic databases tofind relevant chemicalinformation); b) CHM 3001 &4001: seminar evaluation; c)item on exit survey forgraduating seniors; d) item onalumni survey sent each year to3-year and 8-year alumni | a) 100% of studentssuccessfully completeassignment; b) CHM 3001:100% of students with scores ≥2 on literature item; CHM4001: same as for CHM 3001;c), d) average response ≥ 3 on5-point scale where 5=stronglyagree, 1=strongly disagree | a) 100%; b) 100% of students in CHM3001 and 4001 (combined); c) Average = 4.5; d) 3.0 | Department chair collectscourse information andassessment committeeadministers surveys.Information is sharedwith assessmentcommittee and thencommunicated toappropriate (e.g.curriculum) departmental committees. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 6. Students will be able toapply the scientific method ofinvestigation. | a) Student research activity; b)ACS review of sample researchreports submitted as part of 5-year review of major. Reportsselected from those submitted bymajors enrolled in undergraduateresearch; c) item on exit surveyfor graduating seniors; d) itemon alumni survey sent each yearto 3-year and 8-year alumni | a) 50% or more of graduatingmajors complete a researchproject; b) positive review ofreports by ACS; c), d) averageresponse ≥ 3 on 5-point scalewhere 5=strongly agree,1=strongly disagree | a) 66%; b) ACS review report received FA16 and received positive feedback; c) Average = 4.8; d) 4.5 | Department chair collectscourse information andassessment committeeadministers surveys.Information is sharedwith assessmentcommittee and thencommunicated toappropriate (e.g.curriculum) departmentalcommittees. |
| 7. Students will be able tocommunicate technicalmaterial effectively inspeaking & writing | a) CHM 3001 & 4001: seminarevaluation; b) presentation inCHM 3460; c) writingassignments in CHM 3780 (finalreport) and 3915 (binary phaseexperiment report); d) item onexit survey for graduatingseniors; e) item on alumnisurvey sent each year to 3-yearand 8-year alumni | a) CHM 3001: 90% of studentsreceive passing score on firstattempt; CHM 4001: same asfor CHM 3001; b) 100% ofstudents with summary scoreof 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=stronglyagree, 1=strongly disagree | a) 100% of students in CHM3001 and 4001 (combined); b) 100% c) 100%; d) Average (speaking) = 4.5, average (writing) = 4.3; e) Average (speaking) = 3.5, average (writing) = 3.0 | Department chair collectscourse information andassessment committeeadministers surveys.Information is sharedwith assessmentcommittee and thencommunicated toappropriate (e.g.curriculum) departmentalcommittees. |

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

**PART TWO**

During FY18 we had hoped to start revising our assessment criteria for various learning goals and also to re-implement collection of data from alumni. Although alumni surveys were sent out in Spring 2017, response to these paper surveys has always been sparse. In Spring 2018, our Assessment Committee chair has moved these surveys online, so we hope to get a much improved response rate from alumni for inclusion in our FY19 report. Our current assessment criteria for the learning accomplishments of present students are based on percentages of students accomplishing certain goals in specific assignments in different courses. Last year, we expected to revisit some of these specific assignments during FY18 to update them to be sure they are consistent with our current curriculum. This proved impossible following the huge turnover and loss of tenure track faculty between FY17 and FY18. We cannot be sure of where we want our curriculum to be going and what we expect our students to get out of it until there is some stability in who is teaching the classes. In FY18, with many courses taught by 1 year ACFs, we were just able to maintain the status quo. In FY19 we will try again to revisit our learning goals and expected outcomes – there will be a few more experienced faculty actively participating in the department this year. Another concern with our current method of assessment is the reliance on percentages – with current low numbers of students in many classes, these percentages start to lose any statistical significance. We might look for a way to use data from 2-3 year “chunks” rather than one year individually, which could make it easier to identify legitimate trends. In the response to last year’s report, the lack of quantitative reasoning being explicitly mentioned in our objectives was brought up. This is covered and assessed extensively in our curriculum, with objectives 1-4 all assessing this in some way. As we revise our learning goals, we will also add at least one goal that explicitly addresses this essential part of our students’ learning.

**PART THREE**

In Spring 2017 we were able to send out alumni surveys after a gap the previous year. This has provided additional feedback on how our students perceive their learning on a longer term, which was missing last year. Unfortunately, the number of respondents was low (2), and in surveys being sent out now for next year’s report we are making an online form available to facilitate an increases in number of responses. Most of our course-based assessments also have significantly lower total numbers this year than last year, making comparisons of percentages less trustworthy; nevertheless, there were significant improvements in a number of categories compared to 2017. One of the most notable increases is in student performance on the Major Field Test, with all students meeting our expectations in all subdisciplines this year, while last year all but one subdiscipline was below expectations. This points towards a general increase in retention of chemistry knowledge by graduating seniors (since they do not study for this exam), and indicates good preparation for the job market or further studies. It seems like alumni and exit surveys corroborate this fact. Excellent performance on course-based measures of critical thinking also indicates that we may be improving in that area, and the CHM 2730 course used as part of this assessment is also a good measure of students’ quantitative reasoning skills (the course title is Quantitative Analysis). One of our strengths is in experimental training, and students’ high scores in this area help show this. Two challenges for us are to recover our faculty numbers so that more students will be able to take advantage of undergraduate research experiences, ideally pushing this percentage towards 100%, and to maintain and replace instrumentation used for teaching and research so that students will receive an up to date education and be well prepared for the instrumentation that they will encounter in future jobs or graduate school. Alumni surveys (only 2 responses) were very low on questions relating to computer skills, use of chemical information technology, and written and spoken communication skills. Based on these responses, we should remain aware of possible weaknesses in these areas and how we might improve.