GENERAL EDUCATION ASSESSMENT REPORT

Chemistry, Spring 2012, Fall 2012

STATEMENT OF INSTITUTION MISSION AND COLLEGE GOALS	SP Goal 5: Improve the process for assessing programs, courses, and student learning.
GENERAL EDUCATION OUTCOMES (or student learning outcome/program competency)	Communicate Using Chemical Nomenclature
ASSESSMENT CRITERIA AND PROCEDURES	In the Spring and Fall semesters of 2012, 161 CHEM 101 students took the First Term General Chemistry exam created by the American Chemical Society. 5 of the 70 multiple choice questions on this exam cover the area of chemical nomenclature. In the Spring semester of 2012, 27 CHEM 204 students took the Organic Chemistry Exam (cumulative over two terms) created by the American Chemical Society. 5 of the 70 multiple choice questions on this exam cover the area of chemical nomenclature.
ASSESSMENT RESULTS	CHEM 101: Using the national average correct on each question as a benchmark, our students demonstrated competency in each inorganic chemistry nomenclature question. In fact, our students exceeded the average correct by at least ten percentage points in three of the five questions. 73% of HACC students correctly named an oxyacid, as compared to only 48% nationally. 66% were able to identify the incorrect combination of chemical name and chemical formula, compared to 52% nationally. And 79% (69% nationally) were able to give the name of an atomic compound that contains a polyatomic ion. The two questions in which HACC students performed most closely to the national averages were 1) naming an ionic compound involving a transition metal (58% HACC, 53% nationally) and 2) naming a molecular compound (27% HACC, 24% nationally).

	CHEM 204: Using the national average correct on each question as a benchmark, HACC students demonstrated competency in each organic chemistry nomenclature question. Our students averages four percentage points below the national average on nomenclature questions, and scored 2% higher than the national average for the exam as a whole. Both results are within the standard deviation of reported results. Four of the five questions were multi-concept questions in which an additional concept (polarity, reactions, redox, and spectroscopy) was mixed with nomenclature, so interpretation of competency with regards to nomenclature is for these questions is complicated. However, HACC students scored slightly below the national average on Question 19, which involved nomenclature independent of any other concept. Based on the results of Question 19 and the given fact that HACC students performed slightly above national average norms for entire exam, there is a need for more emphasis on nomenclature in HACC's Chem 203 and Chem 204 classes.
USE OF THE RESULTS	CHEM 101: Chemical nomenclature should be emphasized throughout the entirety of CHEM 101 and not just at the beginning. This can be accomplished when covering other topics by providing with chemical names rather than chemical formulas so the students are forced to determine the formulas. The fact that many students (both at HACC and nationally) confused a molecular compound with a polyatomic ion can be minimized by stressing the importance of chemical charge when discussing nomenclature. CHEM 204: Greater emphasis could be placed on nomenclature throughout the entire two-semester sequence. This can be achieved by the following: include additional questions in each homework assignment specific to nomenclature, assign a higher percentage of points to nomenclature questions on exams, and, if necessary, give nomenclature quizzes periodically throughout each semester.

Additional Notes / Resources	Assessment of Chemistry Program Spring 2013.pdf