

**VALENCIA COMMUNITY COLLEGE**  
**Annual Division Action Plan (DAP) to Assess Student Learning Outcomes**

This form provides a documentation template for annual Division Action Plans (DAPs) designed to assess student learning outcomes. Initial information and projections describe the **PLANNING PHASE** of the process. At the conclusion of the project/activity time frame initial information and projections will be updated by completing an **EVALUATION PHASE** including modifications, outputs and outcomes. Both planning and evaluation information will be organized according to parallel criteria including: (1) a formal goal statement, (2) outcome measures, (3) collaboration with stakeholders, (4) evaluation methods and (5) use of results for improvement of learning.\* The overall process will effectively review and document specific measures of educational effectiveness.

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 \*These criteria are also employed by the Instructional Affairs Committee (IAC) to review proposals requesting funds for learning assessment-enhancement projects.

**DIVISION: Science - West**

**DEPARTMENT/UNIT (as appropriate): Chemistry**

**DEAN: Dr. Ron Keiper**

**EXTENSION: 1324**

**MAIL CODE: 3-4**

**DATE: June 25, 2007**

**TITLE OF PLAN: Intercampus Success in General Chemistry**

**SUPPORTED BY COLLEGE FUNDS (If applicable, please provide approved amount): \$ 100.00**

CRITERIA	PLANNING PHASE Initial Information and Projections	EVALUATION PHASE Modifications, Outputs, Outcomes
<b>1. Goal-principal purpose and objectives of plan</b>	To assess the impact of course design, instruction and assessment in CHM 1025C on learning in CHM 1045C.	The project goal, to assess the impact of course design, instruction and assessment in CHM 1025C on learning in CHM 1045C, has remained consistent. To support the project, a test data bank was purchased from the American Chemical Society.
<b>2. Outcome Measures-how plan will be reviewed and measured</b>	Analyze data on students enrolled in CHM 1025C and subsequently in CHM 1045C. Look for correlations in performance between CHM 1045C and CHM 1025C. Specific measures of final grade and persistence (enrollment, withdrawal).	Test items most relevant to project goals were selected from the national database. A formal evaluation instrument designed to assess learning related to the CHM 1025C to CHM 1045C transition was developed.
<b>3. Collaboration with Stakeholders-individuals and groups involved in the planning and implementation</b>	Work in conjunction with deans and faculty on East and Osceola campuses. Potential funding support from (and thus collaboration with) the IAC.	Because the instrument only contained six questions, faculty at West Campus decided to wait to administer the evaluation to their students until after they examined the results of the evaluation conducted on East. Instead Professor Tony Mellone continued his use of the General Chemistry national exam developed by the American Chemical Society by administering all seventy questions to his CHM 1045C students at the end of the semester. Professor Mellone has been administering this test for more than five years.

<p><b>4. Evaluation</b>-process employed to evaluate effectiveness</p>	<p>Analyze data on students enrolled in CHM 1025C and subsequently in CHM 1045C.</p>	<p>Analysis revealed that the 21 students averaged a score of 35 out of 70 on the ACS exam. This average ranks at approximately the 50<sup>th</sup> percentile nationwide. Since this national exam is administered to students at both two-year community colleges and four year colleges and universities, we feel our ranking on the exam demonstrates that Valencia students are being well prepared. There was a positive correlation between the ACS test score and the final grade in the course</p>
<p><b>5. Use of Results</b>-how plan will/has impacted learning and improvement of the educational program</p>	<p>Findings will be used to determine action in student advising, course pre-requisites, and common course outlines. Results and suggestions will be shared with chemistry departments, faculty and staff on all campuses.</p>	<p>Based on the results of the evaluation developed and administered by Professor Zurosky, West Campus faculty plan to administer the exam at the end of the 200730 semester and during 200810. An intercampus focus group consisting of chemistry faculty and staff will be formed to explore approaches for either adjusting prerequisite requirements or adjusting the CHM1045C curriculum to account for the needs of the under-prepared student.</p>

## Project Summary

The project goal was to assess the impact of course design, instruction and assessment in CHM 1025C (Introduction to General Chemistry) on learning in CHM 1045C (General Chemistry I). To support the project, a test data bank was purchased from the American Chemical Society. An instrument was developed from the test data bank that consisted of six questions (see attachment #1) sampling from a broad knowledge and critical thinking skills base. In addition, the questions increased in complexity by incorporating multiple concepts and problem solving steps to correctly answer the question.

## Procedure

The assessment instrument was administered to CHM 1045C students near the end of the course. The instrument consisted of questions to determine the level of preparedness of the student and six concept/critical thinking questions. The completed assessments were scored and divided into two categories. One category consisted of students who had taken high school chemistry within the past year or had taken CHM 1025C and the second category consisted of students who had not taken CHM 1025C and had not taken high school chemistry within the past two years.

## Analysis

Average scores were calculated for each group and a chi-square statistic was calculated for each question (see attachment #2). The null hypothesis = "Student performance on the assessment instrument is independent of student course preparation."

## **Results**

The average score for students who had taken high school chemistry within the past year or had taken CHM 1025C was 3.8 questions correct out of 6 versus 2.4 questions correct out of 6 for students who had not taken CHM 1025C and had not taken high school chemistry within the past two years.

The chi-square statistic showed only the last two questions (higher order questions) demonstrated a significant difference in student populations.

## **Future Work**

Based on the results of this project, the formation of an intercampus focus group consisting of chemistry faculty and counseling and advising staff to explore approaches for either adjusting prerequisite requirements or adjusting the CHM1045C curriculum to target and address the needs of the under-prepared student is recommended.