

Program Assessment Report

Program: Chemical Technology - Associate in Applied Science

Year: 15/16

Division: Science and Mathematics

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Delta College



Actions Taken in Response to Last Year's Report

Explain the importance of GC analysis in the laboratory courses

Rationale for Current Assessments

Assessment 1 of 4

Goal / Project

Outcome(s)

Evaluate results from chemical experimentation (EVALUATION)

Standard / Objective

The expectation is that the students will score greater than 75% in determining the Rf of the spots on a TLC

Method of assessment

Capstone Exam(s) / Mock Prof Exam

Comment/Details about the method of assessment

Students were required to analyze TLC data provided from an experiment

Courses Affected

CHM 210LW & CHM 220LW

Time Frame

Winter 2015

Submitted By

Dave Baker

Result

Result

(0) Results far below expectation/standard

Data Collection (general or specific stats regarding results)

The answers were graded by the faculty teaching the course using a rubric that had been developed. 100% of the Chemical Technology students in the CHM 220LW class scored greater than the expectation of 75%. This is the same as in winter 2015.

The Chemical Technology students in the CHM 220LW class scored only 50% in the second part far below the expectation of 75%. This is MUCH LOWER than the 67% in winter 2015. The Chem. Tech. scored 50% much lower than the students in winter 2015 at 86% in this part of the assessment. These results suggest that they understand and comprehend the polarity of functional groups as they apply to the reactants and

products under discussion.

What We Learned (areas for improvements, strengths, etc.)

Compared to the previous assessment of this skill, the students scores are the same. This is a relatively easy concept and the students have mastered this. On reflection there appears to no confusion among the students in calculating Rf's. Compared to the previous assessment of this skill, the students scores are MUCH lower. This is a VERY concerning. As students understand the Rf component, there is a great deal of misunderstanding towards this more complex component of TLC. There is obviously confusion between solvents used in TLC and the actual solutes run on the TLC. These have different effects and are all functional group dependent which focuses on chemical structures and polarity.

Use of Data to Improve Student Success

Remove this first part from the Evaluation assessment exam and introduce a different analytical concept into the Lab practical. Clearly there is a drop in students ability to use the TLC data to determine the solvents used in the TLC experiments. We need to focus more on explaining solvent polarity and its importance in solute mobility. Clearly students are missing the important correlation of solvent polarity and thier chemical structures. The students need more opportunities to experience this skill and experiments atht use TLC as part of its analysis.

Institutional Student Learning Outcome	Action plan items of what is planned based on the data and results
<input checked="" type="checkbox"/> Apply Knowledge and Skills	<input type="checkbox"/> Change assignments/activities <input type="checkbox"/> Update course content
<input checked="" type="checkbox"/> Think Critically	<input type="checkbox"/> Change materials provided <input type="checkbox"/> Update course outcomes
<input type="checkbox"/> Communicate Effectively	<input type="checkbox"/> Adjust grading rubric <input type="checkbox"/> Update prior courses
<input type="checkbox"/> Act Responsibly	<input type="checkbox"/> Continue to Monitor <input type="checkbox"/> Other

Assessment 2 of 4

Goal / Project

Outcome(s)

Evaluate results from chemical experimentation (EVALUATION)

Standard / Objective

The expectation is that the students will score greater than 75% in determining the Rf of the spots on a TLC

Method of assessment

Capstone Exam(s) / Mock Prof Exam

Comment/Details about the method of assessment

The expectation is that the students will score greater than 75% in determining the Rf of the spots on a TLC

Courses Affected

CHM 210LW & CHM 220LW

Time Frame

Winter 2015

Submitted By

Dave Baker

Result

Result

(1) Results did not meet expectation/standard

Data Collection (general or specific stats regarding results)

The answers were graded by the faculty teaching the course using a rubric that had been developed. 100% of the Chemical Technology students in the CHM 220LW class scored greater than the expectation of 75%. This is the same as in winter 2013.

The Chemical Technology students in the CHM 220LW class scored 67%. This is MUCH LOWER than the 85% in winter 2013. The Chem. Tech. scored 86% slightly higher than the all students category at 83% in this part of the assessment. These results suggest that they understand and comprehend the polarity of functional groups as they apply to the reactants and products under discussion.

What We Learned (areas for improvements, strengths, etc.)

Compared to the previous assessment of this skill, the students scores are the same. This is a relatively easy concept and the students have mastered this. On reflection there appears to be no confusion among the students in calculating R_f's. Compared to the previous assessment of this skill, the students scores are lower. This is a little concerning. There is obviously some confusion between solvents used in TLC and the actual solutes run on the TLC. These have different effects and are all functional group dependent which focuses on chemical structures and polarity.

Use of Data to Improve Student Success

Clearly there is a drop in students ability to use the TLC data to determine the solvents used in the TLC experiments. We need to focus more on explaining solvent polarity and its importance in solute mobility. Clearly students are missing the important correlation of solvent polarity and their chemical structures. The students need more opportunities to experience this skill and experiments that use TLC as part of its analysis.

Institutional Student Learning Outcome	Action plan items of what is planned based on the data and results
<input checked="" type="checkbox"/> Apply Knowledge and Skills	<input type="checkbox"/> Change assignments/activities <input type="checkbox"/> Update course content
<input checked="" type="checkbox"/> Think Critically	<input type="checkbox"/> Change materials provided <input type="checkbox"/> Update course outcomes
<input type="checkbox"/> Communicate Effectively	<input type="checkbox"/> Adjust grading rubric <input type="checkbox"/> Update prior courses
<input type="checkbox"/> Act Responsibly	<input type="checkbox"/> Continue to Monitor <input type="checkbox"/> Other

Assessment 3 of 4

Goal / Project

Outcome(s)

Evaluate results from chemical experimentation (EVALUATION)

Standard / Objective

*The expectation is that the students will score greater than 70% in determining the %'s of the GC peaks.
The expectation is that the students will score greater than 70% on the GC peak identification.*

Method of assessment

Capstone Exam(s) / Mock Prof Exam

Comment/Details about the method of assessment

Students were required to analyze GC data provided from an experiment

Courses Affected

CHM 210LW & CHM 220LW

Time Frame

Winter 2015

Submitted By

Dave Baker

Result

Result

(2) Results met expectation/standard

Data Collection (general or specific stats regarding results)

The answers were graded by the faculty teaching the course using a rubric that had been developed. The Chemical Technology students scored an average of 83% in the CHM 220LW class scored greater than the expectation of 70%

The Chemical Technology students in the CHM 220LW class scored greater than the expectation of 70% at 83%. This is slightly less than the 86% scored in winter 2015. However the majority of the students are scoring over the 70% expectation

What We Learned (areas for improvements, strengths, etc.)

Compared to the previous assessment of this skill, the students scores improved. On review there still appears to be still some confusion among the students between H-NMR data and GC data. This will have to be addressed.

Use of Data to Improve Student Success

Need to work on incorporating more of these GC analysis experiments into the curriculum

Institutional Student Learning Outcome	Action plan items of what is planned based on the data and results
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<input type="checkbox"/> Act Responsibly	<input type="checkbox"/> Continue to Monitor <input type="checkbox"/> Other

Assessment 4 of 4

Goal / Project

Outcome(s)

Evaluate results from chemical experimentation (EVALUATION)

Standard / Objective

The expectation is that the students will score greater than 70% in determining the %'s of the GC peaks. The expectation is that the students will score greater than 70% on the GC peak identification.

Method of assessment

Capstone Exam(s) / Mock Prof Exam

Comment/Details about the method of assessment

Students were required to analyze GC data provided from an experiment

Courses Affected

CHM 210LW & CHM 220LW

Time Frame

Winter 2015

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Dave Baker

Result

Result

(2) Results met expectation/standard

Data Collection (general or specific stats regarding results)

The answers were graded by the faculty teaching the course using a rubric that had been developed. 86% of the Chemical Technology students in the CHM 220LW class scored greater than the expectation of 70%

81% of the Chemical Technology students in the CHM 220LW class scored greater than the expectation of 70%.

This is slightly less than the 85% scored in winter 2013. However the majority of the students are scoring over the 70% expectation

What We Learned (areas for improvements, strengths, etc.)

Compared to the previous assessment of this skill, the students scores improved. On review there still appears to be still some confusion among the students between H-NMR data and GC data. This will have to be addressed.

Use of Data to Improve Student Success

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Comments and Action Plan

Discipline/Program Comments

Previously 100% of the chemical technology students had scored greater than the expected 75%. We were pleased with the performance of the students. We should remove or change assessment component relating to Rf of TLC.

Previously 85% of the chemical technology students had scored greater than the expected 75%. Clearly this 67% performance is concerning. We need to change how TLC is discussed and focus more on assuring students understand the difference between the solutes being run on the TLC and the solvents used to run the TLC. Both of which are a function of chemical structure, functional group and polarity. Previously 85% of the chemical technology students had scored greater than the expected 75%. Clearly this 83% performance is concerning. We need to change how TLC is discussed and focus more on assuring students understand the difference between the solutes being run on the TLC and the solvents used to run the TLC.

Advisory Board Comments

Assessment Committee Comments

Curriculum Council Comments

Action Plan

Actions Taken in Response to Older Reports