Program Assessment Report

Program: Chemical Technology - Associate in Applied Science

Year: 17/18

Division: Science and Mathematics

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Delta College

Actions Taken in Response to Last Year's Report

SP17-The students were required analyze two IR spectra that had been obtained from the Infra-Red spectrophotometer A similiar experiment was performed by the students in the lab

The students were required determine the density of two solids and the volumes of organic solvents in separations. Similiar experiments were performed by the students in the lab SP18

The students were required determine the density of two solids and the volumes of organic solvents in separations. Similar experiments were performed by the students in the lab WI18

Rationale for Current Assessments

Assessment 1 of 3

Goal / Project

Outcome(s)

Evaluate results from chemical experimentation.

Standard / Objective

The expectation is that the students will score greater than 70% completing the analysis of two separate IR spectra, indicating the bond stretches, the wavenumbers observed and the potential functional groups represented in the spectra.

Method of assessment

Capstone Exam(s) / Mock Prof Exam

Comment/Details about the method of assessment

The students were required analyze two IR spectra that had been obtained from the Infra-Red spectrophotometer

Courses Affected

CHM 210, 220, 210L, 220L & 230

Time Frame

Spring 2017

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.

As an average all of the Chemical Technology students (2) in the CHM 220LW class scored less than the expectation of 70%. The two students scored about the 50% and 83% respectively. The average score of all of the chemical technology student was 66%

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

This is the first time this broader assessment skill that relates to analysis of IR spectra has been evaluated. The students ability complete the analysis of unknown spectra . l do not think anything needs to be addressed with the chemical technology students. More focused tutoring at the beginningof the lab courses to emphasize the importance of being able to complete these types of analysis on data and lab results

Use of Data to Improve Student Success

These types of analyses of data are an important part of every laboratory experiment and are fundamental in a rapid evalaution of a reaction, looking at reactants used and products produced. These are aspects every chemical technician should be familair and comfortable completing. The data suggest a more detailed discussion of IR spectra and its importance in functional group analysis should be presnted to teh chemical technology students. A very important point is that all of the chemical technology students have taken the analytical chemistry course CHM 230, which should provide ample opportunity for review and reinforcement of this particular skill and technique.

Institutional Student Learning Outcomes

- [x] Apply Knowledge and Skills
- [x] Think Critically
- [ ] Communicate Effectively
- [ ] Act Responsibly

Assessment 2 of 3

Goal / Project

Outcome(s)

Apply chemical principles to solve scientific questions.

Standard / Objective

The expectation is that the students will score greater than 70% completing the separation of two mixtures of organic and aqueous solutions and determining the density of two objects, one regular shaped and one odd-shaped.

Method of assessment

Capstone Exam(s) / Mock Prof Exam

Comment/Details about the method of assessment

The students were required determine the density of two solids and the volumes of organic solvents in separations.

Courses Affected

CHM 210, 220, 210L, 220L & 230

Time Frame

Winter 2018

Submitted By

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.

As an average all of the Chemical Technology students (4) in the CHM 220LW class scored greater than the expectation of 70%. The average score for the four students was 92.5%.

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

This is the first time this broader assessment skill that relates to density and separations has been evaluated. The student's ability complete the density of two objects and separate mixtures of solutions. I do not think anything needs to be addressed with the chemical technology students, just a little more focused tutoring at the beginning to emphasize the importance of these basic calculations and techniques

Use of Data to Improve Student Success

These types of calculations and critical thinking skills every laboratory experiment and are fundamental. The separation of liquids and mixtures are aspects every chemical technician should be familiar with and comfortable completing. The data suggest that the chemical technician students are competent in these areas. A very important point is that all of the chemical technology students have taken the analytical chemistry course CHM 230, which should provide ample opportunity for review and reinforcement of this particular skill and technique.

Institutional Student Learning Outcomes

- ☑ Apply Knowledge and Skills
- ☑ Think Critically
- ☐ Communicate Effectively
- ☑ Act Responsibly

Assessment 3 of 3

Goal / Project

Outcome(s)

Apply chemical principles to solve scientific questions.

Standard / Objective

The expectation is that the students will score greater than 70% completing the separation of two mixtures of organic and aqueous solutions and determining the density of two objects, one regular shaped and one odd-shaped.

Method of assessment

Capstone Exam(s) / Mock Prof Exam

Comment/Details about the method of assessment

The students were required determine the density of two solids and the volumes of organic solvents in separations.

Courses Affected

CHM 210, 220, 210L, 220L & 230

Time Frame

Winter 2018

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. As an average all of the Chemical Technology students (4) in the CHM 220LW class scored greater than the expectation of 70%. The average score for the four students was 92.5%.

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

This is the first time this broader assessment skill that relates to density and separations has been evaluated. The student's ability complete the density of two objects and separate mixtures of solutions. I do not think anything needs to be addressed with the chemical technology students, just a little more focused tutoring at the beginning to emphasize the importance of these basic calculations and techniques

Use of Data to Improve Student Success

These types of calculations and critical thinking skills every laboratory experiment and are fundamental. The separation of liquids and mixtures are aspects every chemical technician should be familiar with and comfortable completing. The data suggest that the chemical technician students are competent in these areas. A very important point is that all of the chemical technology students have taken the analytical chemistry course CHM 230, which should provide ample opportunity for review and reinforcement of this particular skill and technique.

Institutional Student Learning Outcomes

- ☑ Apply Knowledge and Skills
- ☑ Think Critically
- ☐ Communicate Effectively
- ☑ Act Responsibly

Comments and Action Plan

Discipline/Program Comments

I am hopeful that a high expectation above 70% can be achieved by the chemical technology students. The poorer performance by one chemical technlogy student needs to be addressed with a more focused discussion and analysis of IR spectra, during the presentation and application of this analytical technique, in class and in lab, with more re-emphasising of how waveneumbers and bond stretches can be directly correlated to organic functional groups present in a molecule

These types of calculations and critical thinking skills every laboratory experiment and are fundamental. The separation of liquids and mixtures are aspects every chemical technician should be familiar with and comfortable completing. The data suggest that the chemical technician students are competent in these areas. A very important point is that all of the chemical technology students have taken the analytical chemistry course CHM 230, which should provide ample opportunity for review and reinforcement of this particular skill and technique. SP18

This is the first time this assessment has been used. I am hopeful that a high expectation above 70% can be

maintained by the chemical technology students. I will still need to make sure that students can complete the separations and recall the basic calculations necessary to calculate the densities of regular and odd-shaped objects WI18

Advisory Board Comments

Assessment Committee Comments

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Curriculum Council Comments

Action Plan

Actions Taken in Response to Older Reports