

Annual Academic Assessment Report

(BS/FOOD SCIENCE)

(May 12, 2025)

1. Results of analysis of assessment of Student Learning Outcome (SLO)

The Student Learning Outcomes provided below are those related to Quality Assurance.

SLO DS 1 use statistical principles in food science applications

1. SLO DS.1 was assessed in Spring 2025 in FDSC 41103 Food Analysis. Two different Learning Assessment Techniques (LAT) were used to assess DS.1:

LAT 1 (Documented Problem Solution) *Students were given a food product and asked to analyze the moisture, ash, protein, fat, total carbohydrate, sodium and calcium contents and prepare a Nutrition Facts Label. Administered to 16 students and students had 3 weeks to complete the assignment. Students were evaluated using a 10-point rubric.*

LAT 2 (Open-Ended Essay) *Students used the results from LAT 1 to discuss the factors that could contribute to large variations and deviation from the true values. Administered to 16 students, and students had 1 week to prepare the essay. Students were evaluated using a 10-point rubric.*

2. Key Findings for SLO DS.1:

LAT 1 (Documented Problem Solution): *14/16 (87.5%) students scored 10 points; 2/16 (12.5%) students scored 8 points.*

LAT 2 (Open-Ended Questions): *16/16 (100%) of students received 10 points.*

3. Interpretation of key findings in connection to student learning:

LAT 1 (Documented Problem Solution): All students scored in the range of the highest point and the B range of the rubric. By this measure ELO (DS1) was met.

LAT 1 (Open-Ended Essay): *All students scored in the highest point range of the rubric. By this measure the ELO (DS1) was met.*

4. Description of anticipated actions for improvement of teaching and learning based on key findings:

Based on the findings that both LATs were met, we plan to continue the same teaching methods for this ELO.

SLO DS.2: Employ appropriate data collection and analysis.

1. SLO DS.2 was assessed in Spring 2025 in FDSC 41103 Food Analysis. Two different Learning Assessment Techniques (LAT) were used to assess DS.2:

LAT 1 (Documented Problem Solution): *A laboratory experiment was performed with a food product. Students needed to determine the total sugar content with the phenol-sulfuric acid method. Students needed to extract the sugar, dilute the extracted sugar solution to the appropriate concentration, prepare standard sugar solutions, and construct a standard curve. Then students were required to construct a standard curve with an equation and an R^2 greater than 0.99 to be considered as satisfactory. Administered to 16 students to complete the experiment in one lab session. Students were evaluated using a 10-point rubric.*

LAT 2 (Open-Ended Essay): *Students used the equation and the dilution factor to calculate the sugar content per serving of the food product. The students compared their results with the sugar content listed on the package label and discussed any discrepancies and the possible reasons behind them. Administered to 16 students, and students had 1 week to prepare the essay. Students were evaluated using a 10-point rubric.*

2. Key Findings for SLO DS.2:

LAT 1 (Documented Problem Solution): 16/16 (100%) students scored 10 points.

LAT 2 (Open-Ended Essay): 14/16 (88%) scored 10 points, 2/16 (12%) scored 8 points.

3. Interpretation of key findings in connection to student learning:

LAT 1 (Documented Problem Solution): All students scored in the highest point range of the rubric. By this measure ELO (DS2) was met.

LAT 2 (Open-Ended Essay): All students scored in the range of the highest point and the B range of the rubric. By this measure the ELO (DS2) was met.

4. Description of anticipated actions for improvement of teaching and learning based on key findings:

Based on the findings that both LATs were met, we plan to continue the same teaching methods for this ELO.

SLO DS. 3: construct visual representation of data

1. SLO DS.3 was assessed in Fall 2024 in FDSC 43004 Food Chemistry. Two different Learning Assessment Techniques (LAT) were used to assess DS.3:

LAT 1 (Paper): *A laboratory experiment was performed with food samples stabilized at various relative humidities; students needed to find water activity and moisture content using the loss on drying method and a commercial water activity meter. Students were asked to construct moisture sorption isotherms using the data obtained. Administered to 30 students enrolled in FDSC43004/53004, students had 2 weeks to complete the paper. Administered to 30 students enrolled in FDSC43004/53004, students had 2 weeks to complete the paper. Students were evaluated using a 10-point rubric.*

LAT 2 (open-ended essay): *A laboratory experiment was performed assessing the quantitative analysis of proteins, students were given an unknown protein sample and asked to determine the amount of protein in the unknown sample. This required the construction of a standard curve and using the formula for a straight line to determine the unknown. Administered to 26 students enrolled in FDSC43004/53004, students had 2 weeks to prepare the essay. Students were evaluated using a 10-point rubric.*

2. Key Findings for SLO DS.3:

LAT 1 (paper): 15/30 (50%) students scored 10 points, 5/30 (17%) scored 8 points, 6/30 (20%) scored 7 points while 4/30 (13%) score 6 or fewer points.

LAT 2 open-ended essay: 10/26 (38%) scored 10 points, 12/26 (46%) scored 8 points, 4/26 (16%)

3. Interpretation of key findings in connection to student learning:

LAT 1 (paper) exactly half of the students scored in the highest point range of the rubric, and 20% of students score in the B range of the rubric. By this measure ELO (DS2) was met.

LAT 2 (open-ended essay), only 38% scored the highest point on the rubric, while 46% scored in the B range of the rubric. By this measure the ELO (DS2) was also met.

4. Description of anticipated actions for improvement of teaching and learning based on key findings:

Based on the inconsistency of our 2 data points, we plan on the following:

- Supplement the open-ended essay with a prediction guide and self-grading
- Revisit both assessment instruments for validity

General SLO 6.1. Gain the ability to synthesize, integrate, and apply knowledge developed throughout the undergraduate years.

1. SLO 6.1 was assessed in Spring 2024 in FDSC 4713/5713 Product Innovation. Two different Learning Assessment Techniques (LAT) were used to assess SLO 6.1:

LAT 1 (Product Development Brief): *administered to a group of 20 students enrolled in FDSC 47103/57103; students were assessed in groups on the development or solution to a product development brief provided by Simmons Foods. The assessment included a mid-term presentation, poster, final presentation, and written report. I also evaluated their group collaboration through peer evaluations which were considered in the assessment.*

LAT 2 (Reflective Essay): *administered to a group of 22 students enrolled in FDSC 47103/57103; students were assessed in a reflective essay about the product development project and how they applied their written and oral communication skills, quantitative literacy, diversity awareness, and critical thinking.*

2. Key Findings for SLO 6.1:

LAT 1 (Product Development Brief):

Mid-term Presentation: 14/22 (64%) scored 110/120 pts, 8/22 (36%) scored 96/120 pts

Mid-term Peer Evaluation: 18/22 (82%) scored at least 76.5/85 pts, 2/22 (9%) scored 73/85 pts, 1/22 (5%) scored 70/85 pts, 1/22 (5%) scored 54/85 pts

Poster: 7/22 (32%) scored 50/50 pts, 15/22 (68%) scored 49/50 pts

Final Presentation: 8/22 (36%) scored 146/150 pts, 7/22 (35%) scored 144/150 pts, 7/22 (35%) scored 138/150 pts

Final Written report: 7/22 (35%) scored 118/120 pts, 7/22 (35%) scored 115/120 pts, 8/22 (36%) scored 108/120 pts

Final Peer Evaluation: 18/22 (82%) scored at least 76.5/85 pts, 3/22 (14%) scored at least 73/85 pts, 1/22 (5%) scored 55/85 pts

LAT 2 (Reflective Essay): *12/22 (55%) students scored 20/20 pts, 7/22 (35%) students scored 18/20 pts, 2/22 (10%) students scored 17/20 pts, 1/22 (5%) scored 0 pts.*

Based on these two components, our students were scored on a scale of 0 to 4. 19/22 (86%) students scored 4/4 pts, 2/22 (10%) students scored 3/4 pts, and 1/22 (5%) students scored 2/4 pts.

Scale (Only students who earn a 2, 3, or 4 will be considered proficient.)

4 represents outstanding achievement

3 represents good achievement

2 represents average achievement

1 represents poor achievement

0 indicates no achievement

3. Interpretation of key findings in connection to student learning:

LAT 1 (Product Development Brief): *Our first data point indicates that ELO [6.1] was met as 21/22 (95%) scored within the highest point range (greater than 90%) in the project brief assignment and would be considered good to outstanding achievement.*

LAT 2 (Reflective Essay): *Our second data point indicates that ELO [6.1] was met, as 12/22 (55%) of the students achieved the highest point total and with an additional 7 (35%) students scoring above 90%. We are concerned that we had one student choose not to complete LAT 2, and we had similar issues last year in the course.*

Based on the scores, all students were considered proficient.

4. Description of anticipated actions for improvement of teaching and learning based on key findings:

Based on the results, there are no actions needed for LAT 1. Although all students were considered proficient, we would like to see all students completing LAT 2 and will re-evaluate the assessment timing in the course to improve participation.

2. Any changes to degree/certificate planned or made on the basis of the assessment and analysis.

No changes to the degree program are planned nor were made on the basis of the assessment and analysis.

3. Any changes to the assessment process made or planned.

No changes to the assessment process have been made or planned.