Course LOA Process

Course learning outcomes articulation and alignment

As per the UAEU QA manual, each offered course shall have a set of learning outcomes that specify the knowledge, skills and competencies students will be able to demonstrate after completing the course successfully. The course learning outcomes (CLOs) must contribute to the achievement of the program learning outcomes (PLOs), while each course does that to a different degree and in a different way. Thus, individual courses serve different purposes, and it is the collective learning across all courses that enables the student to achieve the overall PLOs. CLOs are defined, aligned and regularly assessed as per the guidelines provided by the OIE.

Collecting and reporting assessment data

Course instructors are responsible for collecting direct and indirect assessment data that gauge the achievement of the intended CLOs. Course instructors are also required to complete and submit a unified section assessment file for each offered section. The unified assessment file consists of three segments. The first segment is used by the instructor to provide information regarding the assessed section (course code, semester, section number, number of enrolled students, etc.). In the second segment, the instructor provides comments of the following points related to his/her experience with the course offering:

- the appropriateness of course learning outcomes
- the appropriateness of the textbook and other learning resources
- the appropriateness of the utilized assessment instruments
- the appropriateness of the course prerequisites
- the extent to which the syllabus was covered
- general comments on any problems encountered with the course during the semester

In the third segment, the course instructor documents the assessment data collected for each CLO. For each utilized assessment tool 't', the following data is recorded:

- the assessed CLO: 'c'
- the assessment method (direct, indirect)
- the tool's weight: w_t
- the tool's maximum score: m_t
- the score for each student: st_i

Completed assessment files are submitted by course instructors to the Department Learning Outcomes Assessment Committee (DLOAC) as per the assessment timeline published by the OIE.

Aggregating and calculating the achievement scores

After collecting the section assessment files for the entire academic year, the DLOAC uses a software application developed by the OIE to verify the submitted assessment files, aggregate the assessment data, and calculate the actual achievement score for each CLO. The application calculates the actual achievement score for each utilized tool. The calculated scores are then aggregated to generate the actual scores at the section and the course levels.

The achievement score of CLO 'c' when tool 't' is applied (A_{tc}) is calculated as the percentage of students who scored 70% or above of the tool's maximum score (i.e. $\frac{st_i}{m_t} \geq 0.7$). If the instructor utilized more than one assessment tool per CLO, the following weighted average formula is used to calculate the achievement score for each CLO per section.

$$A_{sc} = \frac{\sum_t A_{tc} \times w_t}{\sum_t w_t}$$

Where A_{sc} denotes the achievement score of CLO 'c' in section 's', A_{tc} is the achievement score of CLO 'c' when assessment tool 't' is applied, and w_t is the weight assigned to the tool by the course instructor. The weight is used by the instructor to control how different assessment tools influence the actual score of the CLO, such that the calculated weighted average score reflects the true achievement of the learning outcome. For example, assume that a CLO was assessed in a section using three different tools (a quiz, a question in the midterm exam, and a question in the final exam). Assume also that 16, 14, and 12 out of the 20 students enrolled in the section scored 70% or higher in the three assessment tools respectively. Hence, the achievement scores of the three tools (A_{tc}) are 80%, 70%, and 60% respectively. If the instructor decided to assign the same weight to the three tools, the achievement score of the CLO is calculated as:

$$A_{sc} = \frac{80 + 70 + 60}{3} = 70\%$$

The instructor could give more emphasize to the midterm and the final exams questions by assigning weights 0.5, 1, and 2 to the three tools respectively. Accordingly, the achievement score of the CLO is calculated as:

$$A_{sc} = \frac{80 \times 0.5 + 70 \times 1 + 60 \times 2}{0.5 + 1 + 2} = 65\%$$

If multiple sections were offered for a given course, after calculating the CLO achievement score of each section, the following weighted average formula is used to calculate the overall achievement score of the CLO:

$$A_c = \frac{\sum_s A_{sc} \times n_s}{\sum_s n_s}$$

Where A_c is the overall achievement score of CLO 'c', n_s is the number of students in section 's'. Figure 2 shows the achievement scores for CLO_1 of a course with two sections. It shows that, in case of section 51 (27 students), CLO_1 was assessed by four direct tools, and the actual score was 76%. While in case of section 52 (17 students), 8 direct tools were used to assess the same outcome, and the actual score was 63%. Hence, the actual achievement score of CLO_1 is calculated as:

$$A_{CLO\_1} = \frac{76 \times 27 + 63 \times 17}{17 + 27} = 71\%$$

Analyzing the achievement scores and generating the annual assessment report

The DLOAC sends the calculated CLO achievement scores to the course instructors for analysis. All instructors teaching a given course (course committee) meet together to analyze the received assessment results and recommend remedial actions to address any discovered deficiencies. The DLOAC oversees the analysis process and ensures that an analysis report is submitted for each offered course. The calculated CLOs actual scores are uploaded to the University Assessment Management System along with the associated analysis remarks and remedial actions. The OEI concludes the assessment cycle by generating and publishing the annual course assessment reports.

The annual course assessment report shows the CLO actual achievement score for each offered section, along with the associated projected and weighted scores as shown in Figure 1. The CLO continuous improvement cycle is heavily affected by the proper and realistic setting of the projected score (P_c). The college and program administrators are responsible for setting, and dynamically adjusting, the projected scores to ensure that the continuous improvement cycle

Projected Score:	70%	**Actual Score:** 76%	**Weighted Score:** 108.6%
Date:	06/01/2018	**Course:** Sample Course	
Entered By:	OIE, Admin	**Class** Sample Course - 2017 FALL - 10293 - Instructor, Anonymous	
Notes:	ABCD 310 CLO_1 Section: 51 Number of Students: 27 Direct Tools: HW2 QZ2 QZ-P1 MT-1		
Projected Score:	70%	**Actual Score:** 63%	**Weighted Score:** 90%
Date:	06/01/2018	**Course:** Sample Course	
Entered By:	OIE, Admin	**Class** Sample Course - 2017 FALL - 13347 - Instructor, Anonymous	
Notes:	ABCD 310 CLO_1 Section: 52 Number of Students: 17 Direct Tools: HW1 HW2 HW3 Quiz 1 Quiz 2 Quiz 3 MT FNL		

Figure 1: CLO projected, actual, and weighted score presented in the course assessment report.

remains on. For instance, the minimum projected score is currently set to 70% for all CLOs across the UAEU. It is highly recommended to elevate the projected score from the minimum level, if the actual achievement score is above 70% in multiple consecutive assessment cycles. Elevating the projected score will encourage the course committee to introduce more enhancements that further improve the achievement of the course outcomes.

The CLO weighted score is used to measure the achievement percentage of the CLO projected score.

$$W_c = \frac{A_c}{P_c} \times 100$$

A weighted score < 100% means that the projected score is not achieved; while a weighted score ≥ 100% means that the projected score is achieved. Since different CLOs could have different projected scores, the actual scores of the CLOs cannot be aggregated to measure the course overall effectiveness score. Instead, the weighted score of each CLO is calculated, and the calculated scores are aggregated to calculate the course overall effectiveness score as shown in Figure 2. Presenting the CLOs weighted scores and the course effectiveness score in the course assessment report gives the program and the college administrators a clear indication regarding the course performance without getting into the assessment details of each outcome. Figure 2 shows the header of the annual course assessment report. It shows the course information (i.e., course code, title, and catalogue description) and the course overall effectiveness score. It also shows a graph

that illustrates the projected and actual scores for each CLOs. Each point in the graph represent the actual achievement score of a CLO (A_c)
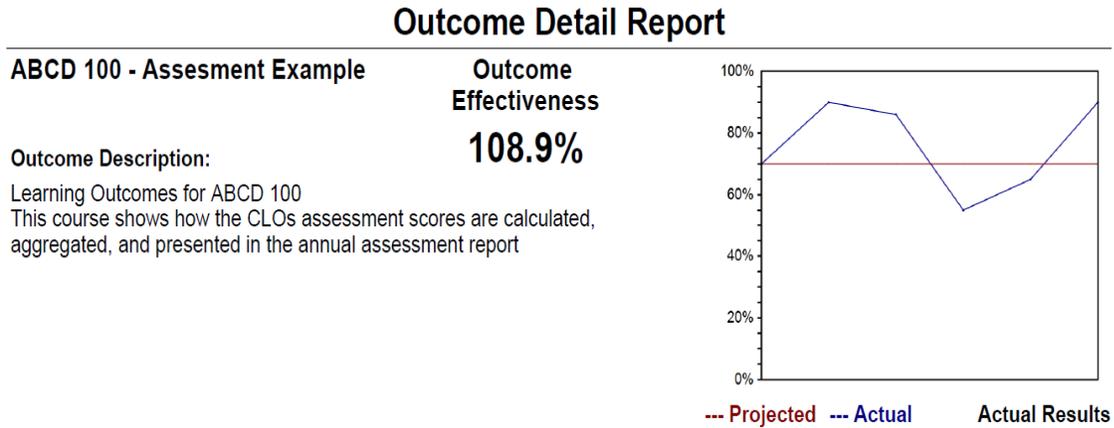

Figure 2: The header of the course assessment report.