



# Instructions for Completing the Course Learning Outcomes Matrix

2026 (1447 H)



## Disclaimer:

This guide describes the structure, data flow, and automated calculations used in the Course Learning Outcomes (CLO) Matrix workbook. All calculations, reports, and achievement results are generated automatically based on the data entered in the relevant sheets and the approved CLO–PLO mappings and performance indicators. **Instructors are advised to review the entered data and the resulting outputs to ensure that the information appears accurate, complete, and consistent with the approved course and program specifications.** If any results seem unexpected, adjustments should be made in the relevant source sheets, as all summary reports update automatically based on those inputs.

## First: Students Sheet

S.No	STUDENT ID	STUDENT NAME
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		

### 1. Course Information Section

Please fill in the following fields exactly as they appear in the official course records:

- **Department:** Cybersecurity
- **Class:** BSc
- **Semester:** Enter the current semester and academic year
- **Section:** Enter the section number
- **Course Code:** Enter the official course code (e.g., SEC1101)
- **Course Title:** Enter the official course title
- **Credit Hours:** Enter the number of credit hours
- **No. of Students:** Enter the total number of enrolled students
- **Instructor Name:** Enter the instructor's full name



## 2. Student List Table

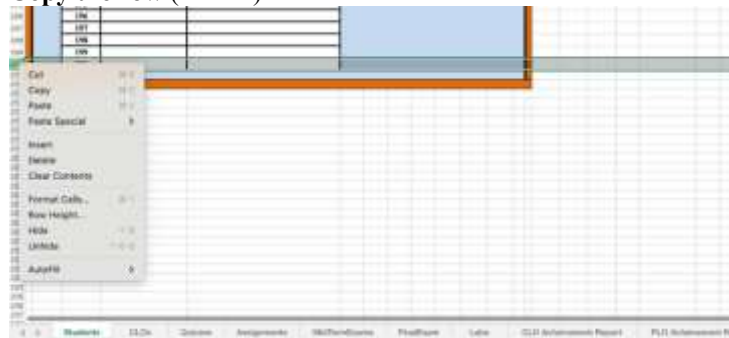
Fill in the table as follows:

- **S.No**
  - This column is a serial number.
  - It should start from **1** and continue sequentially for all students.
  - Do not skip numbers.
- **Student ID**
  - Enter the official university student ID for each student.
  - Each student must have a unique ID.
- **Student Name**
  - Enter the student's full name as registered in the system.

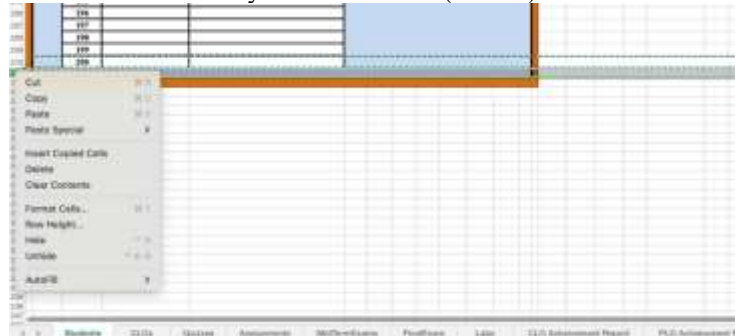
Each row represents **one student only**.

### Very Important:

- Students must be added **ONLY by copying existing cells**:
  - Scroll to the **last student row** (e.g., student 200).
  - **Select the entire last row** (S.No, Student ID, Student Name).
  - **Copy the row** (Ctrl+C).



- **Paste it below** as many times as needed (Ctrl+V).



- **Do NOT insert random rows or create new structures.**
- After pasting, **update the S.No manually**: 201, 202, 203, ...
- Repeat the **SAME** copy-paste in each sheet below:
  - Quizzes
  - Assignments
  - MidTermExams
  - FinalExam
  - Labs



## Second: CLOs (Course Learning Outcomes) Sheet

College of Computing Cybersecurity Department		Alignment of CLO with Program Learning Outcomes (PLO)											
CLO#	CLO Description	Knowledge & Understanding			Skill						Value		
		K1	K2	K3	S1	S2	S3	S4	S5	S6	V1	V2	V3
CLO_1		No	No	No	No	No	No	No	No	No	No	No	No
CLO_2		No	No	No	No	No	No	No	No	No	No	No	No
CLO_3		No	No	No	No	No	No	No	No	No	No	No	No
CLO_4		No	No	No	No	No	No	No	No	Yes	No	No	No
CLO_5		No	No	No	No	No	No	Yes	No	No	No	No	No
CLO_6		No	No	No	No	No	No	No	Yes	No	No	No	No
CLO_7		No	No	No	No	No	No	No	No	No	No	No	No
CLO_8		No	No	No	No	No	No	No	Yes	No	No	No	No
CLO_9		No	No	No	No	No	No	No	No	No	No	No	No
CLO_10		No	No	No	No	No	No	No	No	No	No	No	No

This sheet is used to **define the Course Learning Outcomes (CLOs)** and show how each CLO is aligned with the **Program Learning Outcomes (PLOs)**. The information entered here is essential for CLO and PLO achievement sheets.

### 1. Course Information Section (Top of the Sheet)

This section is **automatically populated from the Students sheet**. **No manual entry or modification is required**. Please **do not enter or change** any of the following fields:

- Department
- Class
- Semester
- Section
- Course Code
- Course Title
- Credit Hours
- No. of Students
- Instructor Name

### 2. CLO Number (CLO# Column)

- Each row represents **one Course Learning Outcome**.
- The CLO numbering (e.g., CLO\_1, CLO\_2, ...) is **predefined**.
- **Do not rename, delete, or reorder** the CLO numbers.

### 3. CLO Description Column

- Enter the **exact CLO statements** as written in the approved **Course Specification (TP-153)**.
- **Do not rephrase or modify** the wording.
- Each CLO description should clearly describe what the student is expected to know or be able to do.



#### 4. Alignment of CLO with Program Learning Outcomes (PLO)

This section shows how each CLO contributes to the program-level outcomes. The table below illustrates the PLO categories as specified in the approved Cybersecurity Program Specification:

Knowledge and Understanding	
K1	Explain cybersecurity foundations, principles, concepts, theories, procedures, operations, policies, and technologies at basic and advanced levels.
Skills	
S1	Use abstraction, modeling, and mathematical concepts, methods, and techniques to analyze computing-based problems in a diverse context in the program's discipline.
S2	Apply systems and software development and management principles, methodologies, techniques, and tools to innovatively and creatively analyze, design, implement, and evaluate systems and applications at various complexity levels to satisfy identified stakeholders' requirements while considering security principles by design and quality assurance.
S3	Use operating systems, networks, and databases principles, theories, models, and relevant algorithms to design secure systems, networks, databases, and architectures for systems and software with a focus on relevant issues to the program's discipline.
S4	Investigate relevant issues and advances to the program's discipline using appropriate research methods and techniques across a broad spectrum of current and emerging topics to engage in continuing professional developments.
S5	Communicate effectively to demonstrate the results, knowledge, skills, and advanced principles in various professional contexts.
S6	Apply cybersecurity methods, methodologies, techniques, and tools to innovatively and creatively undertake complex and diverse cybersecurity operations and mitigate risks in the presence of cybersecurity threats.
Values, Autonomy, and Responsibility	
V1	Work with autonomy as a responsible citizen, constructive decision-maker, and cooperative team member based on Islamic ethics and principles with the ability to develop entrepreneur and leadership skills and actively participate in serving society

To Fill This Section:

- For each CLO, change “No” to “Yes” only under the PLO(s) that the CLO supports.
- A CLO may align with **one or more PLOs**
- The alignment must match what is approved in the **Program Specification**.
  - Do not mark multiple PLOs unless they are officially mapped.

#### 5. Important Instructions

- **Do not edit column headers, colors, or formulas.**
- Only change cells that contain “No” or “Yes” where alignment is required.
- Do not add extra CLOs beyond those approved.
- Ensure consistency with Course and Program Specifications



### Third: Quizzes Sheet

The screenshot shows a spreadsheet with the following sections:

- College of Computing, Cybersecurity Department**
- Assessment Type: Quizzes**
- Department:** Cybersecurity **Class:** BSc **Semester:** First Semester 2025/2026
- Section:** **Course Code:** **Course Title:**
- Credit Hours:** **No. of Students:** **Instructor Name:**
- Quiz and Course Learning Outcomes Weight Matrix** (Table with CLOs and Quizzes 1-4)
- Quizzes Results** (Table with S.No, ID, Name, and marks for Quizzes 1-4, Total Marks, and %)

#### 1. Assessment Information Section (Top of the Quizzes Sheet)

**Assessment Type: Quizzes**

Department: Cybersecurity Class: BSc Semester: First Semester 2025/2026  
 Section: Course Code: Course Title:  
 Credit Hours: No. of Students: Instructor Name:

- **No data entry is required in this section**
- This section is **automatically populated from the *Students* sheet.**  
All fields are linked using formulas to ensure **data consistency across the entire workbook.**
- **Note:** Any attempt to manually edit this section may **break the links** between sheets and cause inconsistencies in reports.

#### 2. Quiz and Course Learning Outcomes (CLO) Weight Matrix

Quizzes		Quiz 1					Quiz 2					Quiz 3					Quiz 4				
CLOs	Quizzes	S					S					S					S				
		Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
CLO 1																					
CLO 2																					
CLO 3																					
CLO 4																					
CLO 5																					
CLO 6																					
CLO 7																					
CLO 8																					
CLO 9																					
CLO 10																					

- This section is used to **map each quiz question to the Course Learning Outcomes (CLOs)** it assesses.
- The mapping entered here is essential for **accurate CLO achievement calculation.**

For each quiz:

1. For each question (Q1, Q2, Q3, Q4, Q5, etc), **assign it to one CLO only.**
2. Enter the **full mark of the question** in the cell that corresponds to:
  - The correct **CLO row**
  - The correct **Quiz and Question column**



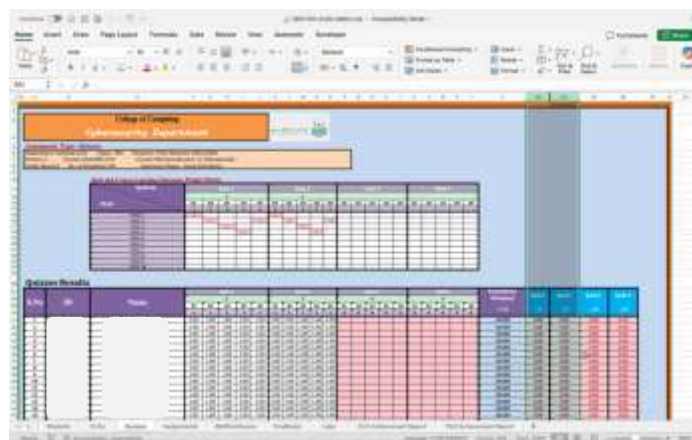
Example:

- If **Quiz 1 – Question 2** assesses **CLO\_3** and the question mark is **2**, enter **2** in the cell under **Quiz 1 → Q2 → CLO\_3**.

CLOs	Quizzes				
	Quiz 1				
	Q1	Q2	Q3	Q4	Q5
CLO_1	1				
CLO_2			1		
CLO_3		2		1	
CLO_4					1
CLO_5					
CLO_6					
CLO_7					
CLO_8					
CLO_9					
CLO_10					

### 3. Important Rules

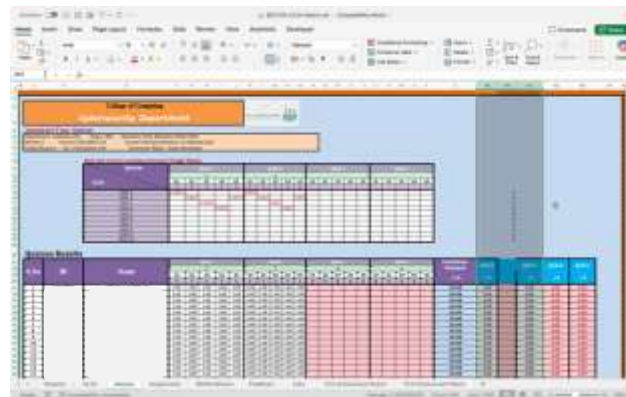
- Each question must be assigned to **only one CLO**.
- Do **not** leave a question unassigned.
- Do **not** assign the same question to multiple CLOs.
- Only numeric values should be entered.
- Some columns in the **Quizzes** sheet are intentionally **hidden** because they are **calculation columns**, not data-entry areas:
  - The hidden columns (e.g., **AA in Quizzes** contain **intermediate CLO calculation results**).



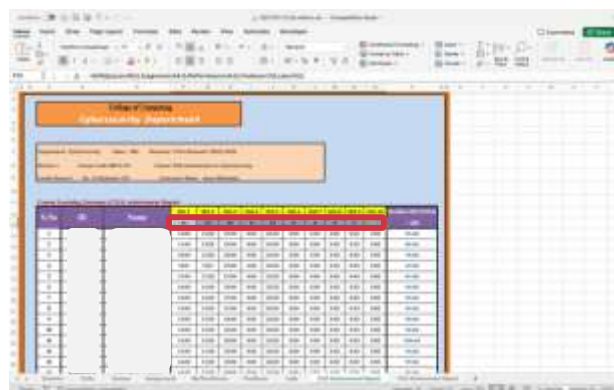
- To unhide these cells:
  1. Select the columns surrounding the hidden area
  2. Click on the column letter before the hidden columns or the hidden one (e.g., column Z or same hidden column AA).
  3. While holding Shift, click on the column letter after the hidden columns (e.g., column AC).
  4. Right-click anywhere on the selected column headers.
  5. Click Unhide from the menu.



The hidden columns will now appear.



- The values in these columns are **inputs used by the CLO Achievement Report** in formulas such as:  
`=SUM(Quizzes!AB15,Assignments!AA15,MidTermExams!AA15,FinalExam!V15,Labs!U15)` in the **CLO Achievement Report** sheet.





#### 4. Quizzes Results Section

S.No	ID	Name	Quiz 1				Quiz 2				Quiz 3				Quiz 4				Total Marks (Obtained)	Quiz 1	Quiz 2	Quiz 3	Quiz 4													
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4																		
			/4	/4	/4	/4	/4	/4	/4	/4	/4	/4	/4	/4	/4	/4	/4	/4																		
1	0	0																					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

- Do NOT Change Any Headers
- All headers in the Quizzes Results table are fixed and formula-driven. No header text, numbers, or labels should be edited.
- These headers are linked to internal formulas that calculate:
  - Student totals
  - Quiz totals
  - CLO achievement
  - PLO achievement

#### 5. Entering Student Marks (Quizzes Results Section)

- In this section, instructors must enter the student’s actual mark for each quiz question.
- What to Enter
  - Each pink cell represents one student’s score for one question.
  - Enter the actual mark obtained by the student for that question.
- Examples:

S.No	ID	Name	Quiz 1				Quiz 2				Quiz 3				Quiz 4				Total Marks (Obtained)	Quiz 1	Quiz 2	Quiz 3	Quiz 4											
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4																
			/4	/4	/4	/4	/4	/4	/4	/4	/4	/4	/4	/4	/4	/4	/4	/4																
1	44400111	ahmed a b	1.00	1.00	1.00	0.00	1.00												4.00	1.00	1.00	1.00	1.00	4.00	1.00	1.00	1.00	1.00	4.00	1.00	1.00	1.00	1.00	4.00

- Enter 1.00 if the student received full marks for a 1-mark question.
- Enter 0.00 if the student did not receive any marks.
- Enter 0.50 if partial marking is allowed.
- Enter 2.00 for a 2-mark question, if applicable.

#### 6. Important Rules

- The entered mark must not exceed the maximum mark shown at the top of the column.
- Do not leave cells blank for attempted questions.
- Enter 0 for unanswered or incorrect questions.
- Marks should be numeric values only.

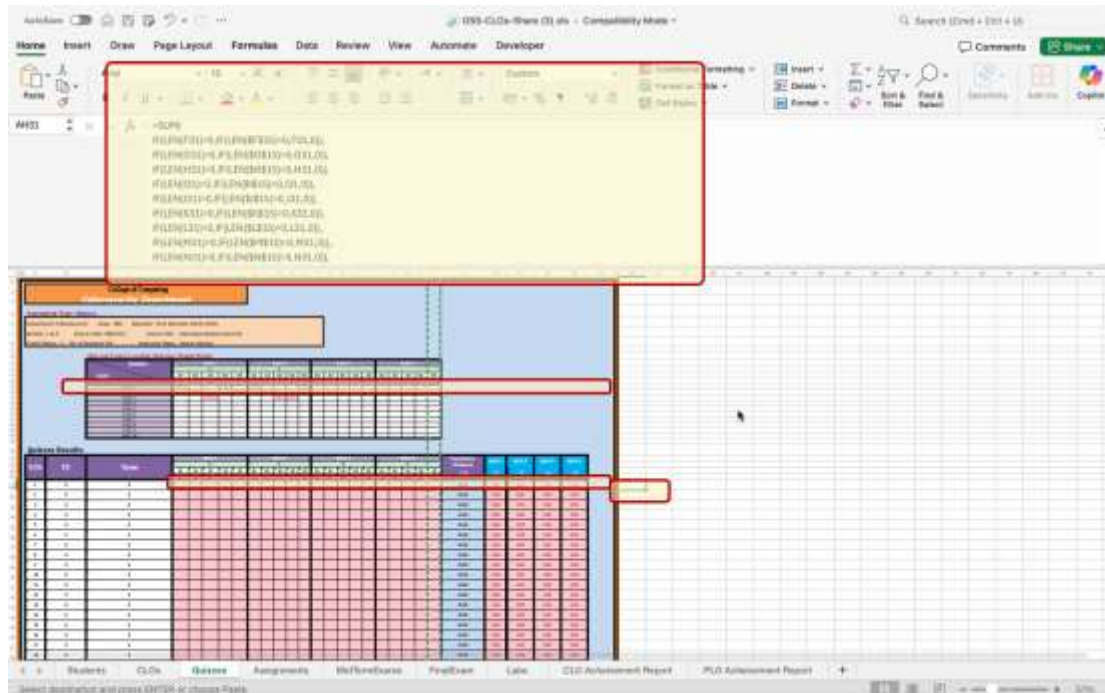
#### 7. What Happens Automatically

- Quiz totals are calculated automatically.
- Total Marks Obtained is updated automatically.
- CLO achievement is calculated based on the CLO–question mapping.
- PLO reports are generated automatically from CLO results.

In the Quizzes sheet, the achievement of Course Learning Outcomes (CLO 1 to CLO 10) is calculated automatically for each student based on their performance in quiz questions that are mapped to specific CLOs.



## 8. How CLOs Calculation Works



The calculation of CLOs is performed automatically based on student performance in assessment items that are mapped to each CLO.

- Each quiz question is mapped to a specific CLO using the CLO Weight Matrix (row 15).
- Student marks for quiz questions are entered in row 31 (for Student 1).
- For each CLO, the Excel sums only the marks of questions starting from column AH in the Quizzes sheet as follows:
  - Have a valid student score (i.e., the cell is not empty), and
  - Are mapped to that CLO in the CLO Weight Matrix (row 15).
  - Otherwise, the value is ignored.
- This is implemented using the following formula:

```
=SUM(  
IF(LEN(F31)>0,IF(LEN($F$15)>0,F31,0)),  
IF(LEN(G31)>0,IF(LEN($G$15)>0,G31,0)),  
IF(LEN(H31)>0,IF(LEN($H$15)>0,H31,0)),  
IF(LEN(I31)>0,IF(LEN($I$15)>0,I31,0)),  
IF(LEN(J31)>0,IF(LEN($J$15)>0,J31,0)),  
IF(LEN(K31)>0,IF(LEN($K$15)>0,K31,0)),  
IF(LEN(L31)>0,IF(LEN($L$15)>0,L31,0)),  
IF(LEN(M31)>0,IF(LEN($M$15)>0,M31,0)),  
IF(LEN(N31)>0,IF(LEN($N$15)>0,N31,0)),  
IF(LEN(O31)>0,IF(LEN($O$15)>0,O31,0)),  
IF(LEN(P31)>0,IF(LEN($P$15)>0,P31,0)),  
IF(LEN(Q31)>0,IF(LEN($Q$15)>0,Q31,0)),
```



```
IF (LEN (R31) > 0, IF (LEN ($R$15) > 0, R31, 0) ),  
IF (LEN (S31) > 0, IF (LEN ($S$15) > 0, S31, 0) ),  
IF (LEN (T31) > 0, IF (LEN ($T$15) > 0, T31, 0) ),  
IF (LEN (U31) > 0, IF (LEN ($U$15) > 0, U31, 0) ),  
IF (LEN (V31) > 0, IF (LEN ($V$15) > 0, V31, 0) ),  
IF (LEN (W31) > 0, IF (LEN ($W$15) > 0, W31, 0) ),  
IF (LEN (X31) > 0, IF (LEN ($X$15) > 0, X31, 0) ),  
IF (LEN (Y31) > 0, IF (LEN ($Y$15) > 0, Y31, 0) ),  
IF (LEN (Z31) > 0, IF (LEN ($Z$15) > 0, Z31, 0) )  
)
```

## 9. How Extra Questions Should Be Added

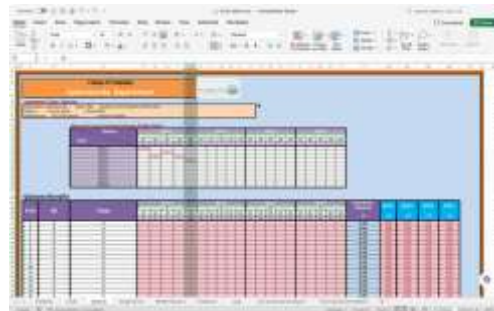
### Step 1: Identify the Quiz Section

For example:

- Quiz 1 currently has: Q1 → Q5

### Step 2: Copy an Existing Question Column Block

1. Select **one full question column** (e.g., Q5):
  - Header
  - CLO matrix cells
  - Student marks cells
2. Right-click → **Copy**







- The **Assignments sheet is a generic assessment sheet.**  
It can be used for **any non-exam assessment**, such as:
  - Assignments
  - Projects
  - Research work
  - Case studies
  - Reports
  - Presentations
- The assessment title (e.g., *Assignment, Project, Research*) is **descriptive only** and does not affect calculations.

### 1. Course Information Section (Top of the Sheet)

This section is **automatically populated from the *Students* sheet.**

- **No entry or modification is required.**
- **Do not change any field in this section.**

### 2. Assignments and CLO Weight Matrix

This section works exactly like the **Quiz and CLO Weight Matrix.**

- Each column (Q1–Q5) represents a **task, criterion, or component** of the assignment.
- Each row represents **one CLO**.
- Enter the **actual mark** of the task/component in the cell that corresponds to:
  - The **correct CLO**
  - The **correct task** (Q1, Q2, ...)
- **If the assignment contains more than 5 questions/tasks**, add additional question/task columns by **following the same steps explained earlier in the *Quizzes Sheet*:**
  - Copy the last existing task column
  - Paste it to the right
  - Rename it sequentially (Q6, Q7, ...)
  - Do **not** modify formulas or CLO rows

### 3. Important Rules

- Each task/component must be mapped to **one CLO only**.
- Enter the **actual marks**, not percentages.
- Leave all other CLO rows blank for that task.
- Some columns in the Assignments sheets are intentionally hidden because they are calculation columns, not data-entry areas.
- As in the Quizzes Sheet, these hidden columns contain intermediate CLO calculation results, which are later used to generate the CLO Achievement Report and PLO Achievement Report.
- To Unhide the Hidden Columns (if needed):
  - Select the column before the hidden columns or one of the hidden columns (e.g., column Z or AA).
  - While holding Shift, select the column after the hidden columns (e.g., column AC).
  - Right-click on the selected column headers. Choose Unhide from the menu. The hidden columns will then appear.
  - The values in these columns are used as inputs in the CLO Achievement Report, through formulas such as:  
`=SUM(Quizzes!AB15, Assignments!AA15, MidTermExams!AA15, FinalExam!V15, Labs!U15)`





## 1. Course Information Section (Top of the Sheet)

This section is **automatically populated from the *Students* sheet**:

- **No entry or modification is required.**
- **Do not change any information in this section.**

## 2. Midterm and Final Exam and CLO Weight Matrix

This section is used to **map each exam question to the CLO it assesses**. (*Same concept as the Quiz/Assignment Weight Matrix*)

### What the Matrix Represents

- **Columns (Q1–Q20)** → Exam questions
- **Rows (CLO\_1 – CLO\_10)** → Course Learning Outcomes
- **White cells** → CLO–question mapping using **actual question mark**

### What Instructors Must Enter

- Enter the **actual mark of the question** in the cell that matches:
  - The **CLO assessed**
  - The **question number**

Examples:

- If **Question 3** is worth **1 mark** and assesses **CLO\_2**, enter **1** under **CLO\_2** → **Q3**
- If **Question 10** is worth **2 marks** and assesses **CLO\_1**, enter **2** under **CLO\_1** → **Q10**

## 4. Important Rules

- Each question must be mapped to **one CLO only**
- Enter **numeric values only**
- Do **not** enter percentages or weights
- Leave all other CLO rows **blank** for that question
- Some columns in the Midterm and Final sheets are intentionally hidden because they are calculation columns, not data-entry areas.
- As in the Quizzes Sheet, these hidden columns contain intermediate CLO calculation results, which are later used to generate the CLO Achievement Report and PLO Achievement Report.
- To Unhide the Hidden Columns (if needed):
  - Select the column before the hidden columns or one of the hidden columns (e.g., column Z or AA).
  - While holding Shift, select the column after the hidden columns (e.g., column AC).
  - Right-click on the selected column headers. Choose Unhide from the menu. The hidden columns will then appear.
  - The values in these columns are used as inputs in the CLO Achievement Report, through formulas such as:  
`=SUM(Quizzes!AB15, Assignments!AA15, MidTermExams!AA15, FinalExam!V15, Labs!U15)`



## 5. Midterm and Final Exams Results Section

This section is used to **enter student marks**, question by question:

- Enter the **student's actual mark** for each exam question in the **pink cells**
- Marks must not exceed the maximum shown at the top of each column
- Use **0** for incorrect or unanswered questions

## 5. What Happens Automatically

- Total mid-term marks and final are calculated automatically
- CLO achievement is calculated automatically
- PLO achievement reports are updated automatically

## 6. How CLOs Calculation Works

The Midterm and Final sheets follow exactly the same calculation logic as the Quizzes sheet. CLOs in the Midterm and Final are calculated using the same formula structure and rules, with the calculation starting from column AF in the Midterm sheet and column Y in the Final sheet, respectively.

## 6. Important Restrictions

- Do not change:
  - Question headers (Q1–Q20)
  - Maximum marks row
  - Total marks columns
  - Any formulas or formatting
- And only enter:
  - CLO mapping values (in the matrix)
  - Student marks (in the pink cells)



## Sixth: Labs Sheet

The screenshot shows a spreadsheet interface for the 'College of Computing Cybersecurity Department'. It includes sections for 'Assessment Type: Labs', 'Lab Evaluation and Course Learning Outcomes Weight Matrix', and 'Lab Results'. The matrix maps 14 labs to 10 CLOs, and the results table shows marks for each lab and CLO.

The Labs sheet follows the same logic and rules as the Quizzes, Assignments, Midterm, and Final Exam sheets. It is designed specifically for lab-based assessments conducted throughout the semester.

### 1. Course Information Section (Top of the Sheet)

This section is automatically populated from the *Students* sheet.

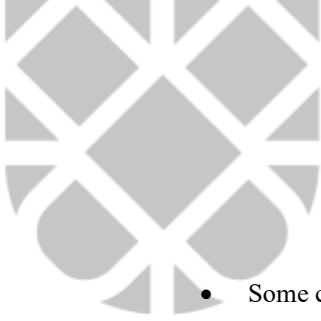
- No data entry is required.
- Do not modify any field in this section.

### 2. Lab Evaluation and CLO Weight Matrix

- This section is used to map each lab to the CLO it assesses:
  - Columns (Lab 1 – Lab 14) → Individual lab activities
  - Rows (CLO\_1 – CLO\_10) → Course Learning Outcomes
  - White cells → CLO–lab mapping using actual lab marks
- What Instructors Must Enter
  - Enter the actual mark allocated to the lab in the cell that corresponds to:
    - The CLO assessed
    - The Lab number
- Examples:
  - If Lab 3 is worth 1 mark and assesses CLO\_2, enter 1 under CLO\_2 → Lab 3
  - If Lab 7 is worth 2 marks and assesses CLO\_4, enter 2 under CLO\_4 → Lab 7

### 3. Important Rules

- Each lab must be mapped to one CLO only.
- Enter numeric values only.
- Do not enter percentages or weights.
- Leave all other CLO rows blank for that lab.



- Some columns in the Labs sheet are intentionally hidden because they are calculation columns, not data-entry areas.
- As in the Quizzes Sheet, these hidden columns contain intermediate CLO calculation results, which are later used to generate the CLO Achievement Report and PLO Achievement Report.
- To Unhide the Hidden Columns (if needed):
  - Select the column before the hidden columns or one of the hidden columns (e.g., column T or U).
  - While holding Shift, select the column after the hidden columns (e.g., column V).
  - Right-click on the selected column headers. Choose Unhide from the menu. The hidden columns will then appear.
  - The values in these columns are used as inputs in the CLO Achievement Report, through formulas such as:  

```
=SUM(Quizzes!AB15, Assignments!AA15, MidTermExams!AA15, FinalExam!V15, Labs!U15)
```

### 3. Lab Results Section

- This section is used to **enter student lab marks**.
- **What to Enter**
  - Enter the **student's actual mark** for each lab in the **pink cells**
  - Marks must not exceed the maximum shown at the top of the column
  - Use **0** for missed or failed lab activities
- **What Happens Automatically**
  - Total lab marks are calculated automatically
  - CLO achievement is calculated automatically
  - PLO achievement reports are updated automatically



### 5. What Happens Automatically

- Total labs marks are calculated automatically
- CLO achievement is calculated automatically
- PLO achievement reports are updated automatically

### 6. How CLOs Calculation Works

The Labs sheet follow exactly the same calculation logic as the Quizzes sheet. CLOs in the Labs calculated using the same formula structure and rules, with the calculation starting from column Z.

### 7. Important Restrictions

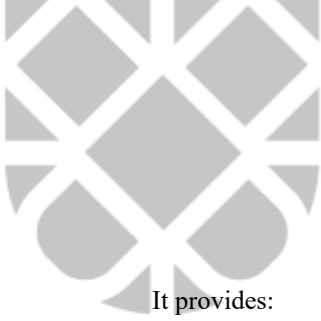
- Do not change:
  - Lab headers (Lab 1 – Lab 14)
  - Maximum marks row
  - Total marks columns
  - Any formulas or formatting
- And only enter:
  - CLO mapping values (in the matrix)
  - Student lab marks (in the pink cells)

### Seventh: Course Learning Outcome (CLO) Achievement Report

College of Computing Cybersecurity Department													
Department: Cybersecurity    Class: BSc    Semester: First Semester 2023/2024													
Section: 1    Course Code: 8821105    Course Title: Introduction to Cybersecurity													
CLOs: 1-10    No. of Students: 20    Instructor: Team - A001													
Course Learning Outcome (CLO) Achievement Report													
S.No	ID	Name	CLO.1	CLO.2	CLO.3	CLO.4	CLO.5	CLO.6	CLO.7	CLO.8	CLO.9	CLO.10	MARKS OBTAINED / 100
1	448000111	ahmed ali	15.00	27.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.00
2	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

The CLO Achievement Report summarizes student performance per CLO based on:

- Quizzes
- Assignments / Projects
- Mid-Term Exam
- Final Exam
- Labs



It provides:

- Individual student CLO scores
- Overall CLO achievement levels
- Percentage of students who achieved each CLO
- Percentage of students who did not achieve each CLO

This report is used for **quality assurance, accreditation, and CLO/PLO analysis.**

This sheet is **fully automated. Do NOT enter, edit, or delete any values in this sheet.** All data shown here is **calculated automatically** from other sheets in the workbook:

- **Students** → Student ID, Name, total number of students
- **Quizzes** → Question-level student marks mapped to CLOs
- **Assignments** → Assignment/Project marks mapped to CLOs
- **MidTermExams** → Midterm question marks mapped to CLOs
- **FinalExam** → Final exam question marks mapped to CLOs
- **Labs** → Lab marks mapped to CLOs

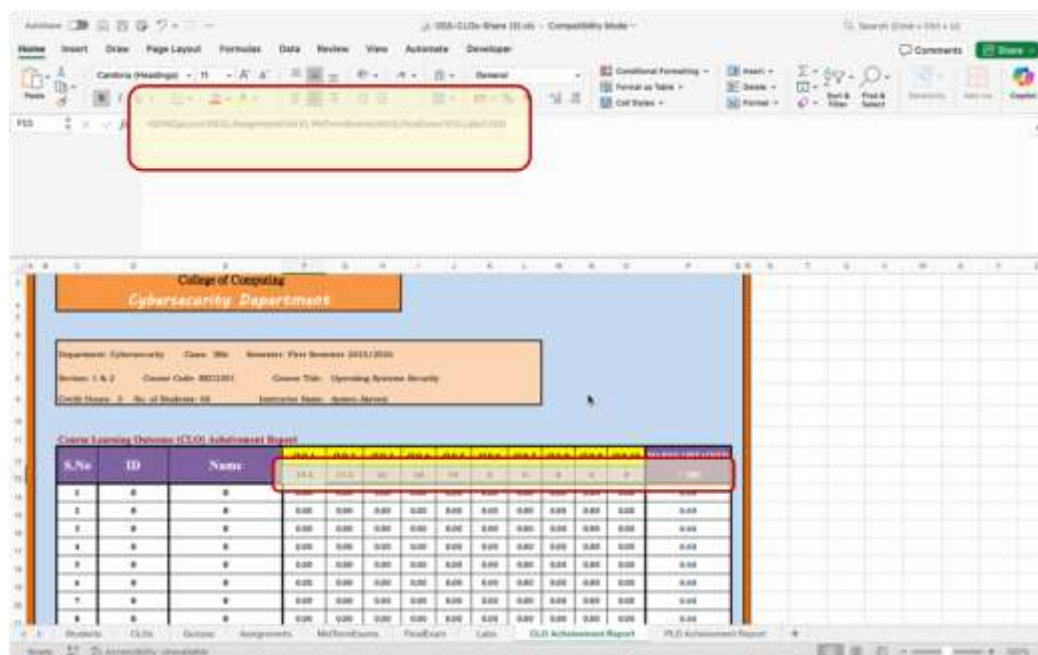
Once marks are entered correctly in those sheets, this report updates automatically.

### 1. Student Information (Top Section)

- Department, Class, Semester, Course Code, Course Title, Credit Hours, Instructor Name
  - Automatically linked from other sheets
  - **Do not modify**

### 3. CLO Columns (CLO\_1 → CLO\_10)

The cells under CLO\_1 to CLO\_10 calculate the overall achievement value for a specific Course Learning Outcome (CLO) by combining the results from all assessment components used in the course using a similar formula to the one below:



=SUM(Quizzes!AB15,Assignments!AA15,MidTermExams!AA15,FinalExam!V15,Labs!U15))



Each referenced cell represents the **final calculated value of the same CLO** from a different assessment type:

- **Quizzes!AB15** → CLO result from quizzes
- **Assignments!AA15** → CLO result from assignments
- **MidTermExams!AA15** → CLO result from the midterm exam
- **FinalExam!V15** → CLO result from the final exam
- **Labs!U15** → CLO result from laboratory assessments

The formula simply **adds these values together** to produce the **course-level CLO achievement** as shown in this report.

S.No	ID	Name	CLO.1	CLO.2	CLO.3	CLO.4	CLO.5	CLO.6	CLO.7	CLO.8	CLO.9	CLO.10	MARKS OBTAINED
1	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

The following rows show the **total marks obtained by the student for that CLO**, aggregated from all assessment types.

- Example:
  - $CLO\_1 = \text{total contribution from quizzes} + \text{assignments} + \text{midterm} + \text{final} + \text{labs}$  related to CLO\_1
- These values are calculated using formulas (e.g., =SUM(Quizzes!AH31, Assignments!AH31, MidTermExams!AF31, FinalExam!Y31, Labs!Z31))
- **Do not type marks here.**



### 3. MARKS OBTAINED (/100)

- Shows the **final total course mark per student**
- Automatically calculated from all assessments
- **Do not edit**

### 4. Achievement Grades (80% × Outcome Weight)

- This section **automatically calculates the CLO achievement score based on the approved performance indicator**, for example, in Cybersecurity program at least 75% of students are required to achieve a grade of 80% or higher, as defined in the PLO Measurement Plan Report as shown below.

#### Performance Indicators

Performance Indicators Table

PLO	Indicator Code	Description	Target Level
<b>Knowledge</b>			
K1	K1-1	75% of students achieve a grade of 80% or higher	75%
K2	K2-1	75% of students achieve a grade of 80% or higher	75%
<b>Skills</b>			
S1	S1-1	75% of students achieve a grade of 80% or higher	75%
S2	S2-1	75% of students achieve a grade of 80% or higher	75%
S3	S3-1	75% of students achieve a grade of 80% or higher	75%
S4	S4-1	75% of students achieve a grade of 80% or higher	75%
<b>Value</b>			
V1	V1-1	75% of students achieve a grade of 80% or higher	75%
V2	V2-1	75% of students achieve a grade of 80% or higher	75%

- The calculation being demonstrated here is done using the Cybersecurity program as an example.
- The calculated values represent the weighted performance of each CLO after applying the official attainment benchmark and outcome weight.
- All values in this section are auto generated; therefore, cells must not be edited or overwritten.



## 5. Students Achieved

Achievement Grades (80% * outcome weight)	12.80	12.80	32.00	6.40	16.00	0.00	0.00	0.00	0.00	0.00
Students achieved	125.00	115.00	120.00	135.00	139.00					
	89.93%	82.73%	86.33%	97.12%	100%					
Students not achieved	14.00	24.00	19.00	4.00	0.00					
	10.07%	17.27%	13.67%	2.88%	0%					

- Shows:
  - Number of students who achieved each CLO
  - Percentage of students achieving each CLO
- Based on predefined achievement criteria (75% for Cybersecurity Program ONLY)**
- Do not edit**

## 6. Students Not Achieved

Achievement Grades (80% * outcome weight)	12.80	12.80	32.00	6.40	16.00	0.00	0.00	0.00	0.00	0.00
Students achieved	125.00	115.00	120.00	135.00	139.00					
	89.93%	82.73%	86.33%	97.12%	100%					
Students not achieved	14.00	24.00	19.00	4.00	0.00					
	10.07%	17.27%	13.67%	2.88%	0%					

- Shows:
  - Number of students who did not achieve each CLO
  - Percentage of students not achieving each CLO **based on predefined achievement criteria (75% for Cybersecurity Program ONLY)**
  - Do not edit**

**Note:** If the data in this report looks incorrect, the issue is **always** in:

- Missing student marks
- Incorrect question-to-CLO mapping
- Incomplete assessment data in earlier sheets

**Fix the source sheet, not this report.**

**Note:** The data presented in this report is **directly mapped to the “Course Learning Outcomes (CLOs)” table in the Course Report (TP-154) shown below**. Each row in this report corresponds to its respective CLO and reflects the calculated assessment results based on student performance data collected from all assessment components.



**B. Course Learning Outcomes**

**1. Course Learning Outcomes Assessment Results**

Course Learning Outcomes (CLOs)	Related PLOs Code	Assessment Methods	Assessment Results		Comment on Assessment Results
			Targeted Level	Actual Level	
<b>1 Knowledge and Understanding:</b>					
1.1					
1.2					
<b>2 Skills:</b>					
2.1					
2.2					
<b>3 Values, autonomy, and responsibility</b>					
3.1					
3.2					

### Eighth: Program Learning Outcome (PLO) Achievement Report

The screenshot shows an Excel spreadsheet titled "PLO Achievement Report". The main table has the following structure:

PLO	PLO Description	Assessment of PLO in this Program Learning Outcome (PLO)												
		Knowledge and Understanding						Skills						
		K1	S1	S2	S3	S4	S5	S6	V1	V2	V3	Average		
E13.1	Identify the main components of a cell and their functions.	85.00%												
E13.2	Describe the structure and function of the cell wall.	80.00%												
E13.3	Explain the role of the cell membrane in maintaining the cell's internal environment.	80.00%												
E13.4	Compare and contrast the structure and function of plant and animal cells.	80.00%												
E13.5	Describe the process of osmosis and its role in maintaining cell turgor.													
E13.6														
E13.7														
E13.8														
E13.9														
E13.10														
Average		80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%

This report summarizes how well the **Program Learning Outcomes (PLOs)** are achieved based on:

- Course Learning Outcomes (CLOs)
- Students' actual performance in:
  - Quizzes
  - Assignments / Projects
  - Mid-Term Exam
  - Final Exam
  - Labs

This report is used for:

- Program-level assessment
- Quality assurance
- Accreditation and reporting purposes

All data in this sheet is **calculated automatically** from other sheets in the workbook:

- **CLO Achievement Report**
  - Provides achieved/not achieved data per CLO
- **CLO-PLO Mapping** (defined in the CLOs sheet)
  - Determines which CLO contributes to which PLO (K, S, V domains) as follows:
    - Each cell under the PLO columns (K1-K3, S1-S6, V1-V3) uses a formula like:
 

```
=IF(CLOs!E13="Yes", 'CLO Achievement Report'!F216, "")
```



- **Which means:**
  - First checks whether the **CLO is mapped to that PLO** in the **CLOs sheet**.
  - If the mapping is **Yes**, it pulls the **achievement result** from the **CLO Achievement Report**.
  - If the CLO is **not mapped**, the cell remains empty.
- The **Average** row uses a formula like:  

```
=TEXT (AVERAGE ( IFERROR (VALUE (SUBSTITUTE (E14:E23, "%", "")) ,  
"")) , "0") & "%"
```
- **What does this:**
  - Collects all valid CLO achievement percentages contributing to that PLO
  - Ignores empty or non-applicable values
  - Calculates the **average percentage**
  - Displays it as a percentage (%)
  - If no CLOs are mapped to a PLO, #DIV/0! may appear which is **expected behavior** and resolves automatically once data exists.

**Note:** If a value here looks incorrect:

1. Check **student marks** in the assessment sheets
2. Verify **question–CLO mapping**
3. Review **CLO–PLO alignment** in the CLOs sheet

Once corrected, this report updates **automatically**.



**Prepared By:**

Dr. Areej Althubaity

Dr. Aymen Akremi