


# **GUIDELINE** *for* **WRITING** **ACADEMIC PROGRAMME** **& CURRICULUM DESIGN**



MQF 2.0  
Learning Outcomes  
Bloom Taxonomy  
Constructive Alignment

**UNIVERSITI TENAGA NASIONAL**



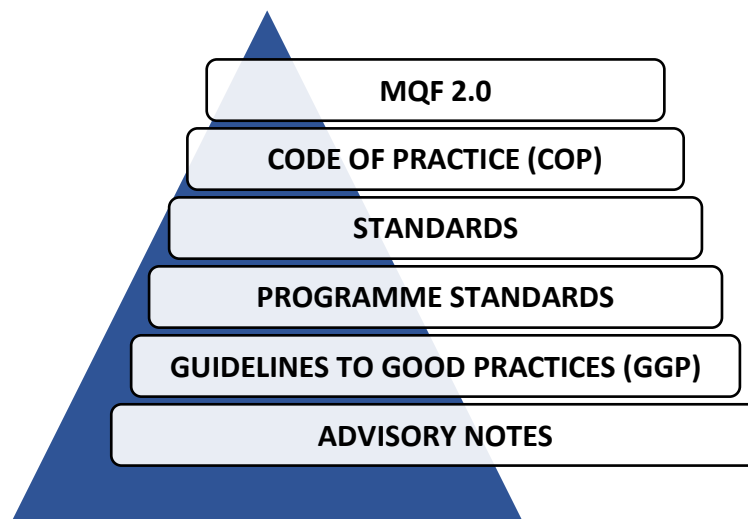
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## 1.0 INTRODUCTION

- 1.1 This guideline covers the development and preparation of the curriculum design for a new academic programme but it can also be the referral for curriculum review of existing structure of an academic programme. The guideline is meant to assist all colleges in UNITEN in designing and mapping of learning outcomes that are aligned with **Malaysian Qualifications Framework, 2<sup>nd</sup> Edition 2017 (MQF 2.0)**.
- 1.2 The guideline should be read together with the respective Quality Assurance documents provided by **Malaysian Qualification Agency (MQA)** according to their level of prescriptiveness as shown in **Figure 1.2**.



**Figure 1.2: Quality assurance documents arrangement according to level of prescriptiveness.**

- 1.3 According to the level of prescriptiveness above,
- **MQF 2.0** clarifies the academic levels, learning outcomes and the credit system;
  - **Code of Practice (COP)** sets out the requirements in relation to programme accreditation (COPPA), institutional audit (COPPIA), Open and Distance Learning

Programme (COP-ODL) and, Technical and Vocational Education and Training (TVET) (COPTPA).

- **Standards** set out the requirements pertaining to specific level of qualifications, for example, Masters and Doctoral Degree.
- **Programme Standards** set out the requirements pertaining to specific fields of academic programme, for example: Accounting, Computing, Education and Language.
- **Guidelines to Good Practice (GGP)** sets out guidelines pertaining to the seven (7) Malaysian Quality Assurance areas, for example: programme development and delivery, assessment of student learning and student selection.

## 2.0 MALAYSIAN QUALIFICATIONS FRAMEWORK (MQF 2.0)

### 2.1 Introduction on MQF 2.0

2.1.1 Malaysian Qualifications Framework (MQF 2.0) is an instrument that develops and classifies qualifications based on a set of criteria that is approved nationally and at par with international practices.

2.1.2 All programmes and qualifications within the higher education provider are expected to comply with the MQF 2.0 as required by the legislation. Act of Parliament (Act 679) gives MQA the powers to implement the Malaysian Qualifications Framework, making MQA the regulatory body that proposes, advises, guides, administers and regulates the higher education providers with specific reference to quality assurance.

2.1.3 There are three (3) main features of MQF 2.0. They are:

- the academic levels – Certificate, Diploma, Degree, Masters and PhD. Their level descriptors are as stated in Appendix 2, MQF 2.0.

- the learning outcomes – the statement on what students should know, understand and can do upon completion of a period of study.
- the credit system – according to UNESCO (2004), a credit is the agreed-upon value used to measure a student's workload in terms of learning time required to complete course units, resulting in learning outcomes.

## 2.2 Levels and Qualifications

2.4.1 MQF 2.0 maintains the eight levels of learning achievement, which are

- i. Certificates (Level 1-3)
- ii. Diploma (Level 4)
- iii. Advanced Diploma (Level 5)
- iv. Bachelor (Level 6)
- v. Master (Level 7)
- vi. PhD (Level 8)

\* *Post-doctoral degrees are not included in the Framework.*

\*\* *The Level and Qualification type is as indicated in **Appendix 1 MQF 2.0**.*

2.4.2 Each level above is provided with generic statements, which describes the learning outcomes at that level reflecting its complexities. Therefore, the levels must be read together with the **level descriptors**, which broadly characterize the learning achievement and guide the assessment standards for each level.

## 2.3 Level Descriptors and Purposes.

2.3.1 **Level descriptors** are statements (in qualitative terms) that describe the learning achievement of a particular level. They define the expected knowledge, capabilities and/or competencies of learners on successful completion of the learning programmes in the context of work and study.

2.3.2 For academic programmes in UNITEN, these statements should be translated and contextualized according to the subject or discipline within each college's specific programme design. They serve the purpose of guiding the process of writing learning outcomes as well as supporting the assessment criteria. The level descriptors are provided in **Appendix 2, MQF 2.0**.

## 2.4 Learning Outcomes

- 2.4.1 **Learning outcomes** are *'statements on what students should know, understand and can do upon successful completion of a period of study, which generally lead to a qualification or part of a qualification'*.
- 2.4.2 The levels and clusters of specific learning outcomes guide the inputs by institutions into the curriculum, teaching, learning and assessment. Many of the learning outcomes are critical-cross field outcomes, generic and relevant in different types of programmes. It will create an impact on the teaching and learning activities and strategies in assessments.
- 2.4.3 According to MQF 2.0, it is expected that the approach to teaching-learning and assessment support the personal growth and progress of broader capabilities or competencies; more knowledge, better cognitive skills, obtaining new work and personal skills. The broader expectation is that the learners are expected to be able to continue to perform and improve these competencies in their working life and further education.
- 2.4.4 The various **Programme Standards** by disciplines or field of study also explain the learning outcomes in accordance to the need of the discipline or field of study. These Programme Standards are as published by MQA on the website: <https://www2.mqa.gov.my/QAD/>

## 2.5 Domains / Clusters of Learning Outcomes

2.5.1 **MQF 2.0** has five (5) clusters and it consists of eleven (11) Learning Outcomes. These learning outcomes clarify the demands and complexity of learning by each level. All five clusters and eleven learning outcomes with their brief descriptions are as shown in **Table 2.7**. More detailed explanations can be found in **MQF 2.0**.

**Table 2.7: Brief descriptions of learning outcomes.**

Cluster	Learning outcome	General description
Cluster 1	Knowledge and understanding	A systematic understanding of facts, ideas, information, principles, concepts, theories, technical knowledge, regulations, numeracy, practical skills, tools to use, processes and systems.
Cluster 2	Cognitive skills	The thinking or intellectual capabilities and the ability to apply knowledge and skills.
Cluster 3	(a) Practical skills	In study context, it may include study skills and preparations, undertaking procedures, scientific skills, designs, research and so forth.
	(b) Interpersonal skills	A range of skills which, amongst others, include interactive communications; relationships and collaborative skills in managing relationships in teams and within the organizations, networking with people of different cultures, as well as social skills/etiquette.
	(c) Communication skills	The ability to communicate/convey information/ideas/reports cogently and professionally in appropriate language.
	(d) Digital skills	The ability to use information/digital technologies to support studies.
	(e) Numeracy skills	The quantitative skills that require learners to acquire increasingly higher levels of numerical abilities which may include understanding of basic mathematics, symbols relating to statistical techniques and etc.
	(f) Leadership, Autonomy and Responsibility	Refers to an individual's ability to build relationships and work with teams made up of peers or in managerial capacities with varying degrees of autonomy.

Cluster 4	(a) Personal skills	Life skills that learners are expected to use daily, which may include demonstrating confidence, self-control; social skills and proper etiquette, and commitment to professionalism.
	(b) Entrepreneurial skills	The skills that require relevant knowledge, ability, talent and expertise in key areas of an enterprise.
Cluster 5	Ethics and Professionalism	The awareness/understanding and respect of ethical, social and cultural differences and issues, as well as professional skills and responsibilities (integrity and professional conduct).

2.5.2 Normally, an individual programme design should address the clusters of learning outcomes appropriately. It describes the general and specific content for knowledge and skills in a subject(s) and related field(s), the level of cognitive skills, and the specialised technical skills, where relevant.

### 3.0 OUTCOME-BASED EDUCATION

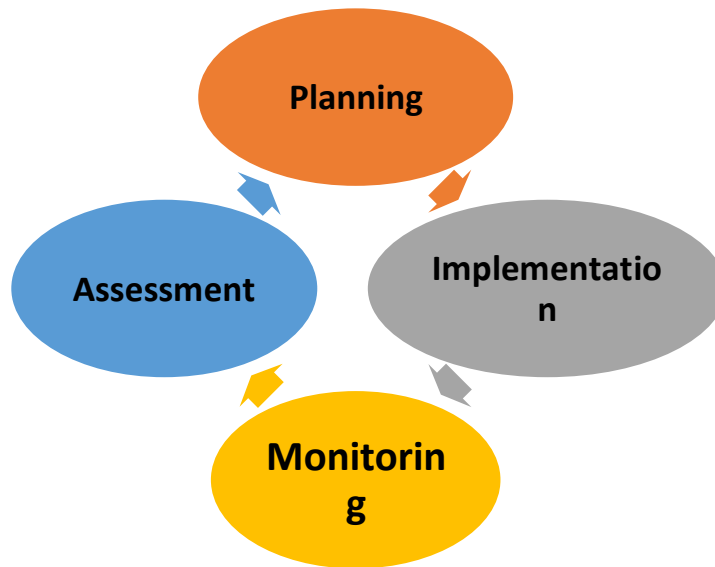
3.1 **Outcome-based Education (OBE)** is an internationally practised educational model that focuses on the measurement of student outcomes and the implementation of corrective measures to overcome deficiencies in course delivery methods / assessment / student attitude, etc. It is an approach of curriculum design that focuses on the end-product and defines what the learner is able to do.

3.2 An OBE curriculum means starting with a clear picture of what is important for students to be able to do, then organizing the curriculum, instruction and assessment to make sure this learning ultimately happens. The four basic principles are (Spady, 1994):



- (i) Clarity of outcomes - focus on helping students to develop the knowledge, skills and personalities that will enable them to achieve the intended outcomes that have been clearly articulated;
- (ii) Designing down - the curriculum design must start with a clear definition of the intended outcomes that students are to achieve by the end of the program. Once this has been done, all instructional decisions are then made to ensure the achievement of this desired end result.
- (iii) High expectation - challenging standards of performance in order to encourage students to engage deeply in what they are learning.
- (iv) Expanded opportunities - This principle is based on the idea that not all learners can learn the same thing in the same way and in the same time. However, most students can achieve high standards if they are given appropriate opportunities. Therefore, there must be focus on lesson content and creative and innovative delivery.

3.3 In general, OBE focuses on four (4) main elements in its implementation throughout the academic program. They are (i) Planning, (ii) Implementation, (iii) Monitoring, and (iv) Assessment as illustrated in **Figure 3.3**.



**Figure 3.3: The four main elements in the OBE process.**

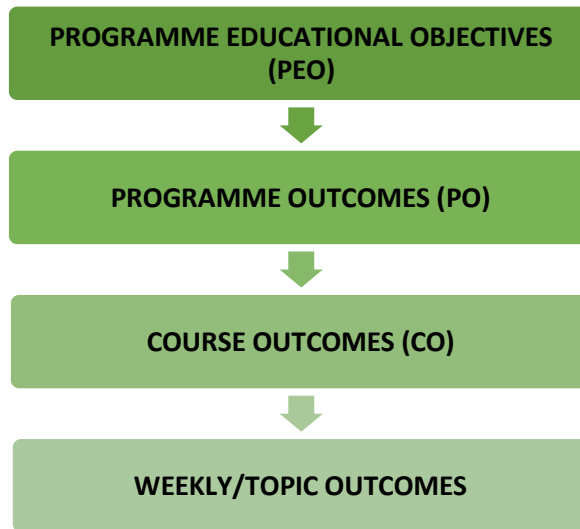
- 3.4 These four main elements are similar to the concept of **PDCA (Plan, Do, Check and Act)** in the **Continuous Quality Improvement (CQI)** process.
- 3.5 In the implementation of OBE, each academic program must have **Program Educational Objectives (PEO)**. The PEOs should cover all clusters of learning outcomes.
- 3.6 Next, the **Program Learning Outcomes (PLO)** need to be designed and aligned with the PEO. The PLO must be explicitly stated to include the knowledge, skills and attitudes to be achieved by the graduates.
- 3.7 In general, each academic program should have a **minimum of seven (7) and maximum of eleven (11) PLO** statements that correspond to eleven (11) Learning Outcomes as specified in Table 2.7, unless stated specifically by respective Program Standard.

- 3.8 Once the PLO is set, Course Learning Outcomes (CLO) need to be designed and aligned with the PLO. The CLO statements should be made clear in relation to the cognitive, psychomotor and affective aspects that need to be achieved by the students at the end of the course.
- 3.9 In UNITEN, there is a slight difference in the terms used as compared to the ones used in MQF 2.0. **Table 3.9** shows the differences in the terms. Nevertheless, the definitions of each term are still the same and do take note that the term **PEO, PO** and **CO** shall be used from this point onwards in this Guidelines.

**Table 3.9: Comparison of terms used in UNITEN with definitions.**

MQF 2.0	UNITEN	Definition
Program Educational Outcome (PEO)	Program Educational Outcome (PEO)	Statements on how graduates are contributing towards the society and industry within the first five years following their graduation.
Program Learning Outcome (PLO)	Programme Outcome (PO)	Statements on what the students will know and be able to do upon completion of the programme. The PLOs must address the generic LOs
Course Learning Outcome (CLO)	Course Outcome (CO)	Intended or desired learning gains in terms of declarative knowledge (factual, conceptual, procedural), functional knowledge (knowledge transfer), metacognitive knowledge, cognitive skills, practical skills, habits of mind, performance, and ways to respond to events and people as a result of the learning experiences in the course/module. It contains the measurable action verbs, the substance/content to be learned and the targeted competency level.

- 3.10 **Figure 3.9.1** shows how the learning outcomes (PEO-PO-CO) are related. Meanwhile, **Figure 3.9.2** shows an example on how the **PEO, PO** and **CO** are mapped.



**Figure 3.9.1: The relation between different levels of learning outcomes.**

PEO	PEO1	PEO2	PEO3	PEO4							
PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course1	✓	✓		✓							
Course2	✓	✓			✓						
Course3	✓	✓				✓					
Course4	✓	✓				✓					
Course5	✓	✓			✓						
Course40						✓		✓	✓		
Course41					✓	✓					✓
Course42			✓	✓					✓		
Course43	✓	✓					✓				
Course44					✓	✓				✓	
Course45				✓	✓				✓		✓
Total	13	17	12	9	9	7	12	6	5	5	5

**Figure 3.9.2: An example of the mapping of PEO-PO-CO.**

## 4.0 IMPLEMENTING OBE IN UNITEN'S ACADEMIC PROGRAMME CURRICULUM DESIGN

### 4.1 Blueprint Mapping of PO-CO

- 4.1.1 In designing an academic program curriculum, Colleges must be directed and focused at achieving certain specific outcomes in terms of individual learning. The importance should be on what the students should understand and be able to do or the qualities they should develop. The curriculum designed must be able to achieve those capabilities or qualities.
- 4.1.2 The most important step in designing an academic programme curriculum is the **mapping of learning outcomes**. The mapping process produces a document called the '**Academic Program Blueprint**'.
- 4.1.3 An **Academic Program Blueprint** provides clear articulation of constructive alignment, and helps in monitoring the progressive attainment of learning outcomes and a well-balanced Student Learning Time.
- 4.1.4 Before mapping can be done, Colleges must first **formulate their PEOs and POs**. PEOs can be three (3) or four (4) statements that are in line with the University Vision and Mission. POs statements are what students should know, understand, and perform upon completing their programme and/or course of study. The rules on writing these statements will be explained in the next subsection.
- 4.1.5 The academic programme mapping **MUST** include all five (5) clusters and eleven (11) learning outcomes as specified in Para 2.7. The purpose of using eleven learning outcomes is to ease up on the determination of **constructive alignment**, which involved teaching and learning strategies

(lecture/tutorial/case study/etc.) and assessment strategies (written test/quiz/presentation/project/etc.).

4.1.6 Individual programme curriculum design should address the clusters appropriately according to the programme’s Body of Knowledge (BOK) and field of specifications. The usual practice is a **one-to-one mapping** between the clusters/learning outcomes and POs. For example, PO1 is mapped to Cluster 1 as shown in **Figure 4.1.6**.

	Cluster 1	Cluster 2	Cluster 3						Cluster 4		Cluster 5
	Knowledge and Understanding	Cognitive Skills	(a) Practical Skills	(b) Interpersonal Skills	(c) Communication Skills	(d) Digital Skills	(e) Numeracy Skills	(f) Leadership, Autonomy and Responsibility	(a) Personal Skills	(b) Entrepreneurial Skills	Ethics and Professionalism
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11

**Figure 4.1.6: Mapping between Clusters of learning outcomes and PO.**

4.1.7 In mapping CO to PO, the College must decide how many POs each course should be mapped to, according to the following categories :

- i. MPU courses (focus on generic POs);
- ii. Non-culminating discipline courses (introductory courses);
- iii. Non-culminating non-discipline courses;
- iv. Culminating courses (FYP, Capstone, Internship, etc.)

4.1.8 After establishing the number of PO statements for each course, it is recommended that the number of COs is mapped to the POs based on one-to-one mapping. Nevertheless the number of COs can also be determined by the **rule (#PO +1)** where **#PO** is the number of PO statement for that particular course as shown in **Table 4.1.8** :

**Table 4.1.8: Determination of number of CO according to number of PO.**

Sample	Number of PO statements mapped to the course	Number of CO statements
Course 1	1	2
Course 2	2	3
Course 3	3	4

4.1.9 Generally, it is suggested that each first and second year courses in any academic programme should have only **three (3) CO statements** that covers all three Bloom's domains (cognitive, psychomotor and affective).

4.1.10 Additionally, courses that are offered in the following year/s can have **three (3) to five (5) CO statements** that correspond to the relevant number of POs. Below are the examples of suggested number of POs to be mapped to course in accordance to program level:

- i. PhD/MASTERS – one course/subject to 3 – 4 POs.  
*(Note: viva/project may have more than 4 POs.)*
- ii. BACHELOR – one course/subject to 2 – 3 POs.
- iii. DIPLOMA – one course/subject to 2 – 3 POs.

*\*Garis Panduan permohonan program akademik KPT 2015*

4.1.11 60% to 70% of the total Course to PO mapping (refer to the number of ✓ in the mapping) should come from Cluster 1, Cluster 2, Cluster 3a and Cluster 3e as shown in the formula below. This is to reflect the **intended learning outcome** and **discipline of the program**. Refer to **Figure 3.9.2** for the generic mapping.

$$60\% \leq \frac{(\text{cluster 1} + \text{cluster 2}) + (\text{of cluster 3a\&3e})}{\text{total}} \times 100\% \leq 70\%$$

4.1.12 All elective courses in the same group should be mapped to the same PO so that all students will attain the same learning outcome. However, this rule may not be applicable for programs that offer various tracks of disciplines and for elective subjects that are shared between programmes.

4.1.13 The POs must also be mapped to the suitable Bloom's domain and Bloom's level to reflect the desired outcome and level of the program. Refer to **Appendix 1 for Bloom's level mapping for UNITEN's academic programmes.**

## 4.2 Writing Statements for Learning Outcomes

### 4.2.1 PEO statements

PEO statements should reflect on what the graduates will be in 4-5 years' time. These objectives are not directly measurable but serve as an aim of what graduates will be many years after their graduation.

Each PEO statement must have verb/s, skillset/s and a context. The skillsets refer to eleven learning outcomes specified in MQF 2.0. Examples of a PEO statements are as shown below:

*“This program will produce graduates who are able to **apply** (verb) **critical thinking** (skillset) in **identifying and overcoming challenges in scientific research**. (context)”*

*“This engineering programme shall produce Civil Engineers who are able to **demonstrate** (verb) **entrepreneurship skills** (skillset) and **recognize** (verb) the need of **life long learning** (skillset) for **successful career advancement**. (context)”*



#### 4.2.2 PO statements

PO statements should state the skills that the students will have upon graduation (in line with programme standards or professional bodies). These outcomes describe what graduates are able to do and know right after they graduate.

Similar to PEO statements, each PEO statement must have **verb**, **skillsets** and **context**. The skillsets refer to eleven learning outcomes specified in MQF 2.0. Below are a few examples of PO statements.

*Describe (verb) a broad range of technical and theoretical knowledge (skillset) related to Business Administration (context).*

*Conduct (verb) academic activities such as collect, analyse, organise, and process data/information (skillset) to make conclusions individually or in groups (context)*

In writing the statements, suitable verb should be used in compliance to Bloom's Taxonomy domains [Cognitive (C), Affective (A) and Psychomotor (P)], as well as the level of programme (Diploma, Bachelor, Masters or Doctoral degrees). **For UNITEN's academic programmes, please refer to Appendix 1 for Bloom's level to MQF 2.0 mapping.** Please refer to **Appendix 2 of the MQF 2.0 document** for programme levels' descriptors that can be used as samples and/or references.

The selected verb must be measurable and it is not advisable to use verbs that are difficult to measure, for example, the verb '*understand*'. The lists of suggested verb for each Cognitive (C), Affective (A) and Psychomotor

(P) domains are given in **Appendix 2**. However, these lists are only suggestions, different academic programs may use the verbs as seen reasonably fit and justified for the programme itself.

### 4.2.3 CO Statements

The characteristics of a well-written CO statements include:

- (a) Mapped to the learning domain in Bloom's or other taxonomy;
- (b) Must state the major skill, knowledge, attitude or ability that student will acquire;
- (c) Expressed in terms of measurable and/or observable behaviour (*hint: ask yourself, how would you test the outcome?*)
- (d) Each CO is mapped to one (1) learning domain only, for example:

<i>At the end of the course, student should be able to:</i>  <i>CO1 – explain the basic principle of thermodynamics.</i> <i>(C2, A3, P4, PO1, PO2)</i>	□
<i>At the end of the course, student should be able to:</i>  <i>CO1 – explain the basic principle of thermodynamics.</i> <i>(C2, PO1)</i>	□

- (e) Written in clear language and in future tense, for example:  
*At the end of the course, students **should** be able to.....*
- (f) Begin with an action verb, for example:  
*At the end of the course, student should be able to:*  
*CO1 – **explain** the basic principle of thermodynamics*

There are three (3) components involved in designing the CO statements. These components are **verb** (V), **condition** (C), **standard** (S).

**VERB:** describes what the learner will be doing or the behaviour, for example:

*By the end of this course/semester, students should be able to:*

- **describe** the principles used in designing X.
- **evaluate** the strengths and weaknesses of ...

The VERB chosen must be well-written following the rules of **SMART** as mention in **Table 4.2.3** .

**Table 4.2.3: Rule of SMARTO and verbs to avoid.**

Well-written verbs must be (SMARTO)	Avoid these verbs
- <b>S</b> pecific	- understand
- <b>M</b> easurable	- appreciate
- <b>A</b> chievable	- know
- <b>R</b> ealistic	- learn
- <b>T</b> ime frame	- aware
- <b>O</b> bservable	- familiar

**CONDITION:** context under which the behavior is to occur, for example:

- **describe** the principles used in designing X. (**V**)
- **describe orally** the principles used in designing X. (**V&C**)
- **design** a beam. (**V**)
- **design** a beam **using Microsoft Excel design template.** (**V&C**)

**CRITERIA/STANDARD:** criteria of acceptable level of performance, for example:

- *describe* the principles used in designing X. (V)
- *describe orally* the principles used in designing X. (V&C)
- *describe orally* the five principles used in designing X. (V&C&S)
- *design* a concrete beam. (V)
- *design* a concrete beam using Microsoft Excel worksheet. (V&C)
- *design* a concrete beam using Microsoft Excel worksheet based on MS EN 1992-1-1: 2010 (NATIONAL ANNEX). (V&C&S)

When writing and designing the CO, do take note that

- it is **NOT compulsory** for every CO to have all **3 learning domains (Cognitive, Affective, Psychomotor)**.
- it is **NOT compulsory** for every CO to have all **3 components** (i.e. V+C+S), however the CO statement **must have at least a V+C or V+S**.
- A CO statement may contain two verbs of the same domain but the weight falls on the verb of the highest level of taxonomy, for example:

.....*state* (Cognitive, C1) and *explain* (Cognitive C2)  
*the basic principles of ...*



## 5.0 GENERAL RULE FOR CONSTRUCTIVE ALIGNMENT

Constructive Alignment is an approach to curriculum design in which the teaching and learning activities are designed to maximize learning by requiring students to engage and activate the verbs specified in the learning outcomes and for them to activate the same verb in the assessment tasks.

The assessment of students and the attainment of COs and POs are the means to support the attainment of the Programme Educational Objectives (PEO). There is a need to align assessment methods with the attainment of the learning outcomes (LO) and the need for a systematic student assessment process within the institution.

Multiple assessment methods should be adopted in measuring the attainment of LOs, which include diverse attributes to be measured. The selection of assessment tasks is made based on common practices in one's respective field and on the experience of academic staff. The choice of instruments must be determined based on the performance criteria, in terms of the qualities and abilities sought in the learner, which are explicitly stated in the LO statements. The type of teaching and learning strategies and assessment methods of each course must be in accordance to the Bloom Taxonomy and the level mapped as shown in **Table 4**.

**Table 4: The MQF 2.0 domains and the appropriate T&L and assessment methods.**

<b>MQF 2.0 Domain</b>	<b>Teaching and Learning Strategies</b>	<b>Assessment Methods</b>
<b>Knowledge</b>	Lecture/Tutorial	Written Tests/ Quiz
<b>Cognitive</b>	Case Study/ Project/ Tutorial/ Group Work	Written Tests/ Presentation/ Essay/ Critiques/ Review/ Reports
<b>Practical Skills</b>	Practical/ Demonstration	Practical Tests/ Studio projects
<b>Interpersonal Skill</b>	Case Study/ Project/ Tutorial/ Group Work	Presentation/ Project
<b>Communication</b>	Case Study/ Project/ Tutorial	Presentation
<b>Digital Skills</b>	Case Study/ Project/ Group Work	Project/ Portfolio
<b>Numeracy Skills</b>	Case Study/ Project/ Tutorial/ Group Work	Written Tests/ Presentation/ Essay
<b>Leadership, Autonomy and Responsibility</b>	Case Study/ Project/ Group Work/ Discussion	Project/ Industrial Attachment
<b>Personal Skills</b>	Case Study/ Project/ Group Work	Project/ Portfolio
<b>Entrepreneurial Skills</b>	Case Study/ Project	Project/ Industrial Attachment
<b>Ethics and Professionalism</b>	Case Study/ Project/ Tutorial/ Discussion	Presentation

## REFERENCES:

1. Malaysian Qualifications Framework, 2<sup>nd</sup> Edition 2017 (MQF 2.0).
2. Writing Learning Outcomes (PPT slides), Hj. Mohamed Nadzri Mohd Yusoff, 2019.
3. Prof. Sr. Ir. Dr. Suhaimi Abdul Talib (Lecture Notes & PPT Slides), Certified Officer In Quality Assurance Of Higher Education Course by MQA, 1 Feb 2021 – 6 Feb 2021.
4. Guidelines to Good Practices: Assessment of Student, MQA 2014.  
<https://www2.mqa.gov.my/qad/v2/ggpnew.cfm>
5. Guidelines to Good Practices: Curriculum Design and Delivery, MQA 2011.  
<https://www2.mqa.gov.my/qad/v2/ggpnew.cfm>

## APPENDIX 1: UNITEN'S ACADEMIC PROGRAMMES BLOOM'S TAXONOMY TO MQF 2.0 MAPPING

Program Level/MQf2.0	CLUSTER 1:	CLUSTER 2:	CLUSTER 3: FUNCTIONAL WORK SKILLS CLUSTER						CLUSTER 4:		CLUSTER 5: Ethics and Professionalism (5)
	Knowledge and Understanding (1)	Cognitive skills (2)	Practical skills (3A)	Interpersonal Skills (3B)	Communication Skills (3C)	Digital skills (3D)	Numeracy Skills (3E)	Leadership, Autonomy and Responsibility (3F)	Personal Skills (4A)	Entrepreneurial Skills (4B)	
PHD (Research)	C5	C6	P5-P7	A4/P5-P7	A4/P5-P7	C4/P5-P7	C6	A4	A4/C5	A4/C5	A4
MASTERS (Research, Mixed Mode & Coursework)	C4	C5	P5-P7	A4/P5-P7	A4/P5-P7	C4/P5-P7	C5	A4	A4/C4	A4/C4	A4
BACHELOR	C2	C4	P4	A3/P4	A3/P4	C4/P4	C4	A3/C3	A3	A3	A3/C3
ADV DIPLOMA	C2	C3	P3	A3	A3	C3/P3	C3	A3	A3	A3	A3
DIPLOMA	C2	C3	P3	A3	A3	C3/P3	C3	A3	A3	A3	A3
FOUNDATION	-	-	-	-	-	-	-	-	-	-	-

### Note:

- For cases with two domains such as 'A4/P4', College has the jurisdiction to choose the suitable domain and justify according to the major discipline of the program. College must also ensure the delivery methods and assessments correlate with the chosen domain.
- Digital skills** generally refer to the ability to use information/digital technologies to support work and studies. The skills include sourcing and storing information, processing data, using applications for problem solving and communication, as well as ethics in applying digital skills. Therefore, if **Digital skill** is for learner as a **user**, then use **P (psychomotor)**; if **Digital skills** is for learner as **developer**, then use **C (cognitive)**.



## APPENDIX 2: SUGGESTED LIST OF VERBS

### COGNITIVE DOMAIN (thinking, knowledge)

Lower order		Intermediate			Higher order		
C1	C2		C3	C4	C5	C6	
REMEMBERING	UNDERSTANDING		APPLYING	ANALYZING	EVALUATING	CREATING	
<p><b>Definition:</b> Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers.</p>	<p><b>Definition:</b> Demonstrate understanding of facts and ideas by organizing, comparing, interpreting, giving descriptions, and stating main ideas.</p>		<p><b>Definition:</b> Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.</p>	<p><b>Definition:</b> Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations</p>	<p><b>Definition:</b> Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria.</p>	<p><b>Definition:</b> Compile information together in a different way by combining elements in a new pattern or proposing new solutions.</p>	
choose copy count define describe discover duplicate draw enumerate examine how identify label list locate match memorize name observe omit quote read recall recite recognize record relate repeat reproduce retell select show spell state tabulate tell visualize what when where which who why	ask associate cite classify compare contrast convert describe differentiate discover discuss distinguish estimate explain extend generalize  give examples  group identify illustrate indicate infer	interpret judge locate observe order outline paraphrase  picture graphically  predict relate rephrase report represent research restate review rewrite select show summarize trace transform translate	act administer apply articulate build calculate carry out change chart choose collect complete compute construct determine develop discover dramatize employ establish examine  experiment with  explain identify illustrate interpret interview judge  make use of	manipulate model modify operate organize plan practice predict prepare produce record relate report schedule select show simulate sketch solve teach transfer use utilize write	advertise analyze appraise assume break down calculate categorize classify compare conclude connect contrast correlate criticize deduce devise diagram differentiate discover discriminate dissect distinguish divide estimate evaluate examine experiment explain focus illustrate infer inspect list order organize outline plan point out prioritize select separate simplify subdivide survey test	appraise argue assess choose compare conclude consider convince criticize critique debate decide deduct defend determine discriminate disprove distinguish editorialize estimate evaluate explain find errors grade interpret judge justify measure order persuade predict prioritize prove rank rate recommend reframe score select summarize support test value weigh	adapt anticipate assemble build change choose collaborate combine compile compose construct create delete design develop devise discuss elaborate estimate facilitate formulate generalize generate hypothesize imagine improve infer  integrate intervene invent justify manage modify negotiate organize originate plan prepare predict produce propose rearrange reorganize report revise rewrite role-play simulate solve speculate structure substitute test validate write

## PSYCHOMOTOR DOMAIN (doing, skills)

Lower order		Intermediate		Higher order		
P1	P2	P3	P4	P5	P6	P7
PERCEPTION	SET	GUIDED RESPONSE	MECHANISM	COMPLETE OVERT RESPONSE	ADAPTION	ORIGINATION
The ability to apply sensory information to motor activity (use sensory cues to guide motor activity).	The readiness to act.  Mentally, physically, and emotionally ready in response to different situations.	The ability to imitate a displayed behaviour or to utilize trial and error.  Adequacy of performance is achieved by practicing.	The ability to convert learned responses into habitual actions with proficiency and confidence.  Perform acts with increasing efficiency, confidence and proficiency.	The ability to skilfully perform complex patterns of actions.  Perform automatically without hesitation (quick, accurate and highly coordinated).	The ability to modify learned skills to meet special events.  Skills are well developed and the individual can modify movement patterns to fit special requirements.	The ability to create new items/patterns for specific situations.  Emphasize on creativity based upon highly developed skills
<ul style="list-style-type: none"> <li>• detect</li> <li>• hear</li> <li>• isolate</li> <li>• listen</li> <li>• observe</li> <li>• perceive</li> <li>• recognize</li> <li>• see</li> <li>• sense</li> <li>• smell</li> <li>• taste</li> <li>• view</li> <li>• watch</li> </ul>	<ul style="list-style-type: none"> <li>• achieve a posture</li> <li>• assume a body stance</li> <li>• begin</li> <li>• display</li> <li>• establish a body position</li> <li>• move</li> <li>• place hand, arm, etc.</li> <li>• position the body</li> <li>• proceed</li> <li>• react</li> <li>• show</li> <li>• sit</li> <li>• stand</li> <li>• station</li> <li>• volunteer</li> </ul>	<ul style="list-style-type: none"> <li>• copy</li> <li>• duplicate</li> <li>• follow</li> <li>• imitate</li> <li>• manipulate with guidance</li> <li>• operate under supervision</li> <li>• practice</li> <li>• react</li> <li>• repeat</li> <li>• reproduce</li> <li>• respond</li> <li>• traces</li> <li>• try</li> </ul>	<ul style="list-style-type: none"> <li>• assemble</li> <li>• calibrate</li> <li>• complete with confidence</li> <li>• conduct</li> <li>• construct</li> <li>• demonstrate</li> <li>• dismantle</li> <li>• display</li> <li>• execute</li> <li>• fasten</li> <li>• fix</li> <li>• grind</li> <li>• heat</li> <li>• improve efficiency</li> <li>• increase speed</li> <li>• make</li> <li>• manipulate</li> <li>• mend</li> <li>• mix</li> <li>• pace</li> <li>• show dexterity</li> <li>• sketch</li> </ul>	<ul style="list-style-type: none"> <li>• act habitually</li> <li>• advance with assurance</li> <li>• control</li> <li>• direct</li> <li>• excel</li> <li>• guide</li> <li>• maintain efficiency</li> <li>• manage</li> <li>• master</li> <li>• organize</li> <li>• perfect</li> <li>• perform automatically</li> <li>• proceed</li> </ul>	<ul style="list-style-type: none"> <li>• adapt</li> <li>• alter</li> <li>• change</li> <li>• rearrange</li> <li>• reorganize</li> <li>• revise</li> <li>• varies</li> </ul>	<ul style="list-style-type: none"> <li>• arrange</li> <li>• combine</li> <li>• compose</li> <li>• construct</li> <li>• design</li> <li>• initiate</li> <li>• make</li> <li>• originate</li> </ul>

## AFFECTIVE DOMAIN (feeling, attitudes)

Lower order		Intermediate		Higher order
A1	A2	A3	A4	A5
<b>RECEIVING</b>	<b>RESPONDING</b>	<b>VALUING</b>	<b>ORGANIZATION</b>	<b>CHARACTERIZATION (INTERNALIZING VALUES)</b>
Is the student aware of or responding to the environment?  Concerned with <b>SIMPLE AWARENESS &amp; SELECTIVE ATTENTION.</b>	Can the student show a new behaviour due to an experience?  Concerned with <b>INTEREST, SEEKING &amp; ENJOYMENT.</b>	Does the student show involvement and commitment?  Concerned with <b>ATTITUDES &amp; APPRECIATION.</b>	Has the student combined and conceptualized a new value, giving it priority?  Concerned with the development of <b>PHILOSOPHY OF LIFE.</b>	Does the student act consistently with the new value?  Concerned with <b>PATTERNS OF ADJUSTMENT.</b>
<ul style="list-style-type: none"> <li>• accept</li> <li>• acknowledge</li> <li>• ask</li> <li>• attend</li> <li>• be aware</li> <li>• follow</li> <li>• give</li> <li>• hold</li> <li>• listen</li> <li>• locate</li> <li>• notice</li> <li>• pay attention to</li> <li>• point to</li> <li>• select</li> <li>• sit</li> <li>• tolerate</li> <li>• reply</li> </ul>	<ul style="list-style-type: none"> <li>• agree to</li> <li>• answer freely</li> <li>• assist</li> <li>• care for</li> <li>• communicate</li> <li>• comply</li> <li>• conform</li> <li>• consent</li> <li>• contribute</li> <li>• cooperate</li> <li>• follow</li> <li>• greet</li> <li>• help</li> <li>• obey</li> <li>• participate willingly</li> <li>• perform</li> <li>• present</li> <li>• read voluntarily</li> <li>• recite</li> <li>• report</li> <li>• respond</li> <li>• visit</li> <li>• volunteer</li> </ul>	<ul style="list-style-type: none"> <li>• accept</li> <li>• adopt</li> <li>• assume responsibility</li> <li>• behave according to</li> <li>• choose</li> <li>• commit</li> <li>• complete</li> <li>• defend</li> <li>• desire</li> <li>• devote</li> <li>• exhibit loyalty</li> <li>• express</li> <li>• follow</li> <li>• form</li> <li>• initiate</li> <li>• invite</li> <li>• join</li> <li>• participate</li> <li>• prefer</li> <li>• peruse</li> <li>• seek</li> <li>• share</li> <li>• show concern</li> <li>• show continual desire to</li> <li>• study</li> <li>• subscribe to</li> <li>• use resources to</li> </ul>	<ul style="list-style-type: none"> <li>• adapt</li> <li>• adhere</li> <li>• adjust</li> <li>• alter</li> <li>• arrange</li> <li>• balance</li> <li>• classify</li> <li>• codify</li> <li>• conceptualize</li> <li>• display</li> <li>• form judgements</li> <li>• formulate</li> <li>• group</li> <li>• organize</li> <li>• rank</li> <li>• synthesize</li> <li>• systemize</li> <li>• theorize</li> <li>• weigh alternatives</li> </ul>	<ul style="list-style-type: none"> <li>• act upon</li> <li>• advocate</li> <li>• defend</li> <li>• exemplify</li> <li>• influence</li> <li>• internalize</li> <li>• judge problems/issues</li> <li>• justify behaviour</li> <li>• maintain</li> <li>• perform</li> <li>• qualify</li> <li>• serve</li> <li>• support</li> </ul>

### References:

1. B.S.Bloom ,Editor, (1956), *Taxonomy of Educational Objectives.*
2. Anderson, L.W., & Krathwohl,D.R.(2001). *A Taxonomy for Learning, Teaching, and Assessing, Abridged Edition.* Boston, MA: Allyn and Bacon.
3. Hoque, M. E., *The Journal of EFL Education and Research (JEFLER), Volume 2, Number 2, September 2016: ISSN-2520-5897.*