

Outcomes-Based Curriculum Development

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Learning Outcomes

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- Formulate and Write properly the statement of expected learning outcomes (ELO)
- Translate ELOs to programme structure and content
- Apply constructive alignment to curriculum development
- Develop properly teaching-learning activities and assessment methods co-ordinated with CLO
- Q&A

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Questions

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- ทำไมต้องทำ AUN QA
(ขอเหตุผลเป็นรูปธรรมชัดเจน ถ้าเป็นไปได้ครับ)
- ประเทศต่างๆ ใน อาเซียนเป็นอย่างไร
ไปถึงไหนบ้าง
ตัวอย่างที่ดีคือมหาวิทยาลัยไหนบ้างครับ
พอเทียบแล้วเราระดับไหน

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Higher Education systems by economic status:

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Economic status	Countries	Higher Education in Focus
Lower income	Cambodia, Lao PDR, Myanmar,	Higher Education Systems are primarily focused on <ul style="list-style-type: none"> ▪ Policy reform & System expansion ▪ Increasing enrollment ▪ Infrastructure development ▪ <u>Quality Assurance Development and Implementation</u>
Low-middle income	Viet Nam	
Middle-income	Indonesia Malaysia Philippines Thailand	Higher Education Systems are increasingly emphasis on <ul style="list-style-type: none"> • Quality Improvement • Internationalisation
High-income	Brunei	Higher Education System is developed more independent with global partnership
	Singapore	Higher Education System is well-developed with high international recognition

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Number of Higher Education Institutions in ASEAN

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Country	#	Country	#
Brunei 0.42	4 (by 2008)	Philippines 102	2299 (by 2013)
Cambodia 15	105 (by 2014)	Singapore 5.7	19 (by 2010)
Indonesia 259	3800 (by 2014)	Thailand 68	141 (by 2013)
Laos 6.8	45 (by 2010)	Timor-Leste 1.2	3 (by 2012)
Malaysia 30	488 (by 2010)	Vietnam 94	376 (by 2009)
Myanmar 54	169 (by 2014)		

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QA Agencies in ASEAN

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Philippines	PAASCU	1957
Indonesia	BAN-PT	1994
Malaysia	MQA	1997
Brunei	BDNAC	2000
Thailand	ONESQA	2000
Singapore	CPE	2000
Cambodia	ACC	2003
Vietnam	GDETA	2003
Laos	QAC	2008

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Diversity of QA Agencies in ASEAN

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Type	Characteristics of QA Agency	Country	Remarks
1	Centralised Governmental Agency	<ul style="list-style-type: none"> Brunei Myanmar Lao PDR Singapore 	<ul style="list-style-type: none"> Under Ministry of Education <u>No autonomy</u>
2	Quasi Governmental Agency	<ul style="list-style-type: none"> Cambodia Indonesia Malaysia Thailand Viet Nam 	<ul style="list-style-type: none"> Sponsored by National Government Have <u>certain autonomy</u> to manage their QA activities
3	Non-Governmental Agency	<ul style="list-style-type: none"> Philippines 	<ul style="list-style-type: none"> <u>Full autonomy</u> Not related to any government bodies

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National Qualifications Frameworks-comparability-implementation experience

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Malaysian Qualifications Framework	<p>Similar features but not identical</p> <ul style="list-style-type: none"> Objectives Scope/sectors Levels -complexity Learning outcomes-domains Credits (learner centric) Ownership/responsibility Generally underpinned by MOE's regulations and quality assurance systems Accreditation and comparability of qualifications
Thai National Qualifications Framework	
Indonesian Qualifications Framework	
Philippines Qualifications Framework	
Brunei D National Qualifications Framework	
Cambodian Qualifications Framework	
Vietnam National Qualifications Framework	
Singapore (Workforce Skills Competency Framework)	
Laos (in progress)	
Myanmar (planning)	

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QS APPROACH TO RANKING
UNIVERSITIES

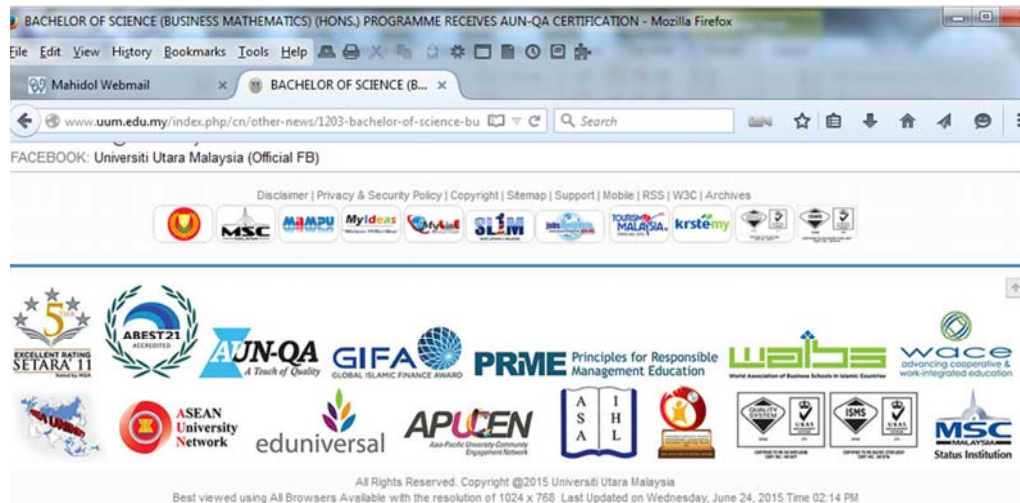


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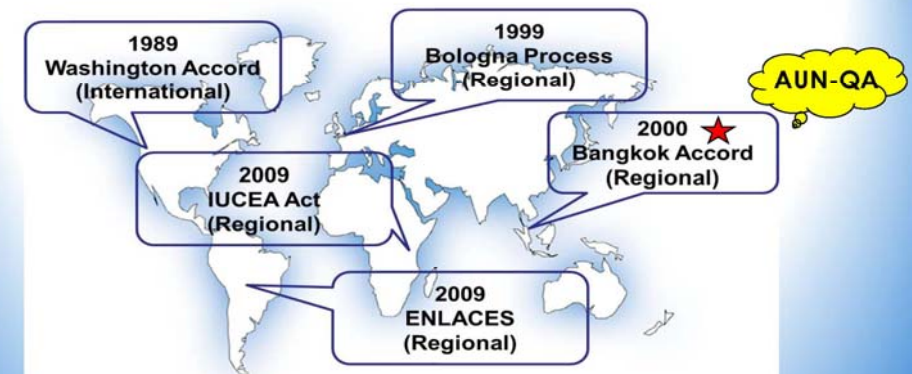
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QA in Higher Education

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21ST CENTURY QUALITY ASSURANCE



Towards a Global QA Network in the 21st Century?

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AUN is The **first** and **only** higher education network under **ASEAN**.



As the host country, the Royal Thai Government provides financial support for the operational costs of the AUN Secretariat.



All member universities work together for the benefit of ASEAN on cost-sharing basis.



"AUN Membership Enlargement"



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Strength of AUN-QA

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- Only **External QA (EQA) Systems and Mechanism** for regional standard **in ASEAN region**
- The AUN network which is supported by **30** Core Member Universities of the **10** ASEAN member countries.
- A network of CQOs and AUN-QA Assessors from **30** AUN-QA Members and **31** AUN-QA Associate Members
- **Strong network in collaboration with both European and Asian QA networks** including DAAD, HRK, ENQA, AQAN, SEAMEO RIHED



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Strength of AUN-QA

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- Gained rich **experiences in programme assessment** in ASEAN
- **QA certification** at programme level is recognised by universities in ASEAN.
- **Well recognised** by national and regional bodies as well as NGOs funding AUN-QA projects



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Brunei Darussalam

Universiti Brunei Darussalam



Cambodia

Royal University of Phnom Penh
Royal University of Law and Economics



Indonesia

Universitas Gadjah Mada
Universitas Indonesia
Institut Teknologi Bandung
Universitas Airlangga



Lao PDR

National University of Laos



Malaysia

University of Malaya
Universiti Sains Malaysia
Universiti Kebangsaan Malaysia
Universiti Putra Malaysia
Universiti Utara Malaysia



Myanmar

Institute of Economics, Yangon
University of Yangon
University of Mandalay



The Philippines

University of the Philippines
De La Salle University
Ateneo de Manila University



Singapore

National University of Singapore
Nanyang Technological University
Singapore Management University



Thailand

Chulalongkorn University
Burapha University
Mahidol University
Chiang Mai University
Prince of Songkla University



Viet Nam

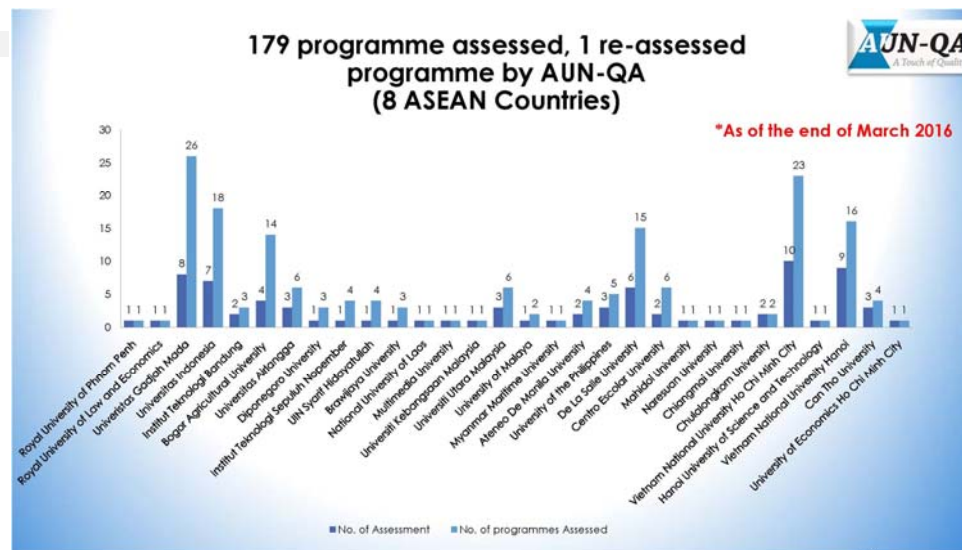
Vietnam National University, Hanoi
Vietnam National University, Ho Chi Minh City
Can Tho University

30 Members



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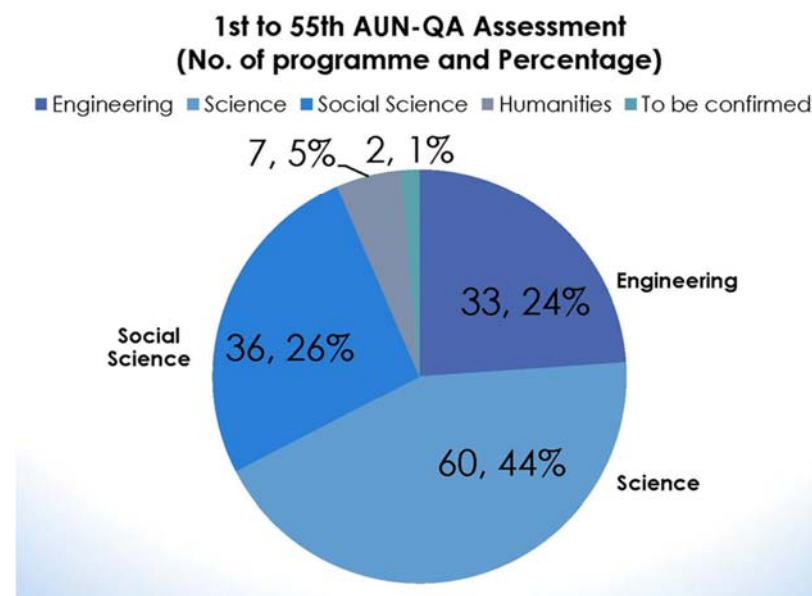
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Classification of programme assessment by subject

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As of the end of 2015

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International recognition

- Publicity of AUN-QA system (AUN-QA Guidelines & AUN-QA Manual) have been used as the examples of good practices among universities in ASEAN as well as East African Universities.
- Translation of AUN-QA Guidelines and Manual to Chinese, Vietnamese, Indonesian and Thai languages
- By being high recognition within ASEAN;

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International recognition

- MOET, **Vietnam** already established the Regional QA Centre at VNU-Hanoi and VNU-HCMC based on AUN-QA System
- MORTHE, **Indonesia** has recognized AUN-QA System to be voluntary implemented among universities.
- Some universities in **Thailand** also adopted AUN-QA System for IQA and has implemented since 2015.

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International Collaboration with dialogue partners

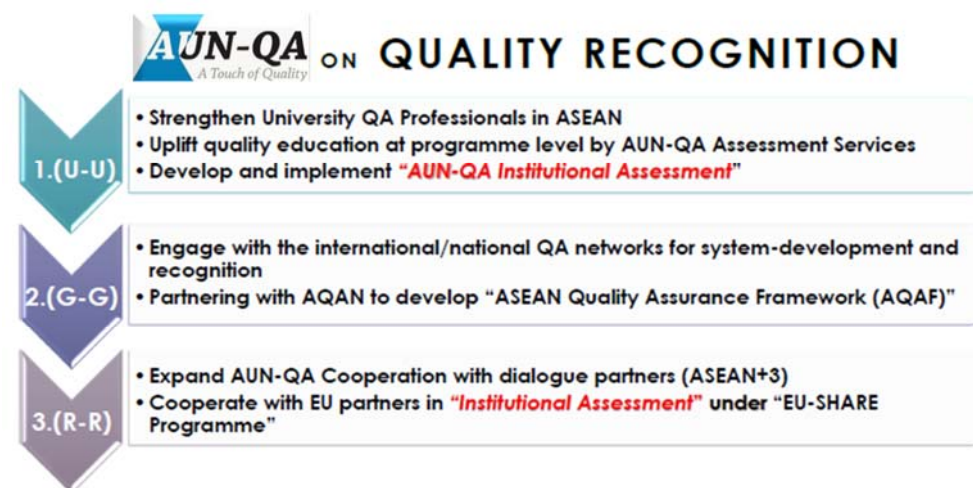
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What's next ..

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AUN-QA Model at Programme Level

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- **Design based on OBE Framework**
- **PDCA Approach to Assessment**
- **Principles-based assessment system designed for Improvement to Best practice**

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Why the shift to outcomes-based education?

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- **International trends in education** show a shift from the traditional 'teacher-centered' approach to a **'student-centered approach'**. This approach is commonly referred to as **outcome-based approach**. The model focuses on what the students are expected to be able to do at the end of the module or programme.

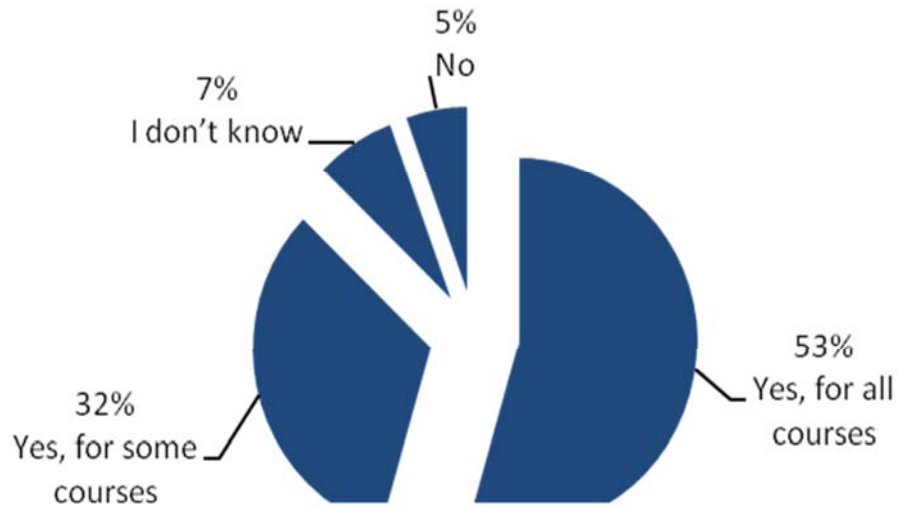
(Kennedy, D. 2007)

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Learning Outcomes at more than 80% Higher Education Institutions

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Reichert S: AAC&U Conference,
Washington D.C., 2010



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Why Urgent?

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- Significant worldwide Higher Education Reform and acceptance
- Global competitiveness
- Labour market will require it

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Questions

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- การกำหนด ELO ของหลักสูตร (PLO)
 - คืออะไร ทำไมต้องมี ELO
 - มีแล้วเอาไปทำอะไร ต่อบ้าง
เช่น กำหนด specification ของหลักสูตร
รายวิชา และ ELO รายวิชา (CLO)
 - วิธีการสร้าง ทำอย่างไรบ้าง
 - ตัวอย่าง ELO ของที่ต่างเป็น วิศวกรรมศาสตร์
ก็จะดีครับ



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What is outcome-based education?

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Outcome-based education (OBE)

is a **learner-centered** learning philosophy that focuses on measuring **students' performance** (the intended learning outcomes). OBE itself is **not a teaching style** or method, it is a principle for **designing your teaching** in an effective way that enables learning happen and **helps students to achieve the intended learning outcomes**. Therefore, what matters most in OBE is "**what is learnt**" rather than "what is taught".

<http://celt.ust.hk/learner-centered-course-design>

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OBE Model

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"Product (ELOs) defines process (SCL)"

Harden RM, et.al. Med Teacher 21(1): 7–14, 1999

Expected Learning Outcomes (ELOs) is what the student should be able to know, understand and to do at the end of the programme.

SCL: "Student-Centered-Learning"



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OBE Concept

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Expected Learning Outcomes

Statements specifying what the learners will know and be able to do at the end of the programme.



Student-Centered Learning

Learning Activities

The teaching and learning methods which the teachers use to achieve each of the Learning Outcomes. Students will know exactly why they are being asked to engage in certain teaching and learning activities in their courses.

Assessments

An on-going process aims improving students' learning by measuring the learning outcomes they have achieved. Feedback will be given so that students know what they need to do in order to get better grades.



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Key Concepts and Principles of OBE

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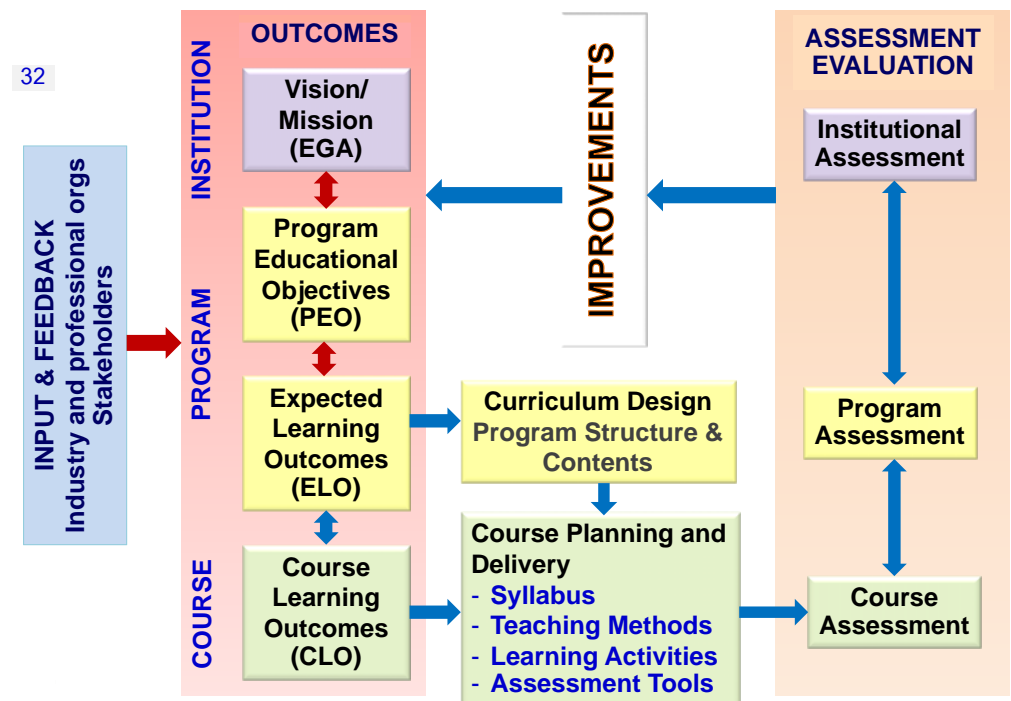
- **Focus on results of learning** (ELOs)
- **Backwards curriculum design** - design down (from the performances expected of graduates) and deliver up.
- **Create learning opportunities** to help different learners achieve learning outcomes
- **Constructive alignment** (assessment – learning activities – learning outcomes)



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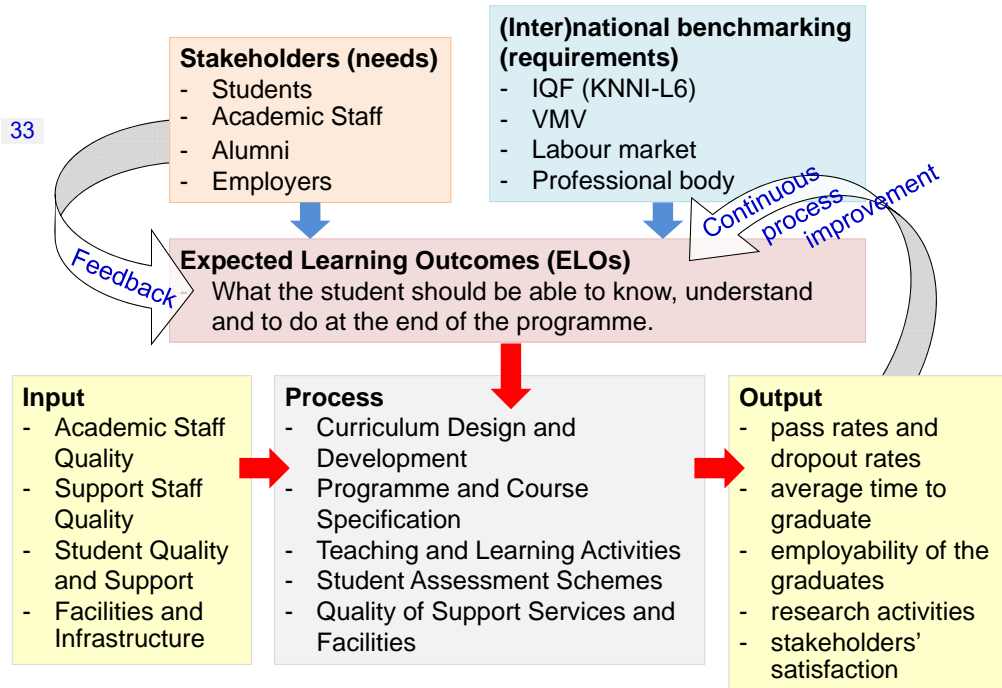
An OBE Model

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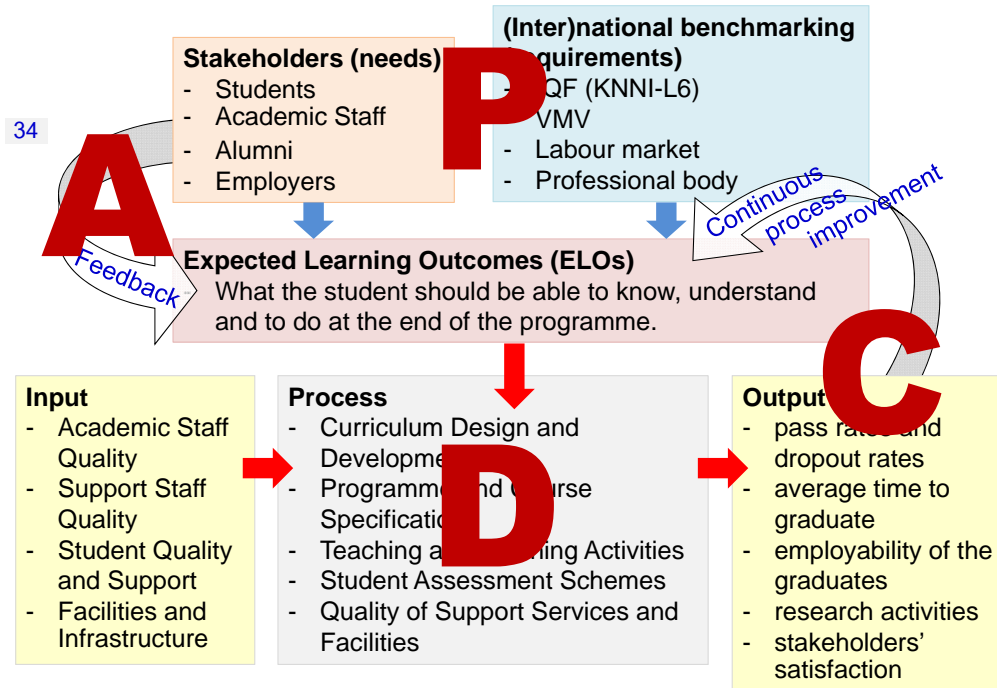


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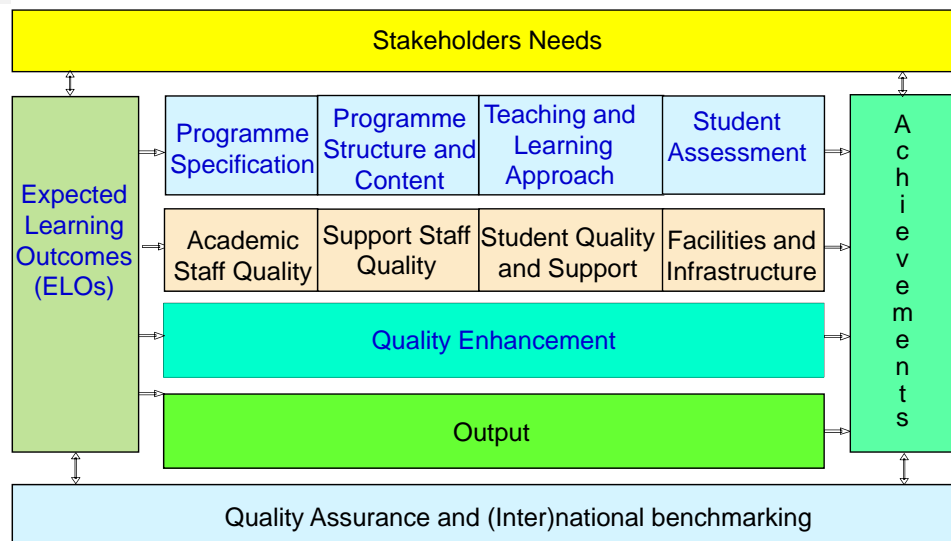
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AUN-QA Model at Programme Level (V.3 2015)

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Criteria

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1. Expected Learning Outcomes
2. Programme Specification
3. Programme Structure and Content
4. Teaching and Learning Approach
5. Student Assessment
6. Academic Staff Quality
7. Support Staff Quality
8. Student Quality and Support
9. Facilities and Infrastructure
10. Quality Enhancement
11. Output



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- **Knowledge** means the body of facts, principles, theories and practices that is related to a field of work or study.
 - **Skills** means the ability to apply knowledge and use know-how to complete tasks and solve problems. Skills are described as cognitive or practical.
 - **Competence** means the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development.

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Categories of Learning Outcomes

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- **Specific outcomes:**
The outcomes that relate to the subject discipline and the knowledge, skills and/or competences particular to it;
 - **Generic outcomes (sometimes called transferable skills)**
The outcomes that relate to any and all disciplines e.g. written, oral, problem-solving, information technology, and team working skills, etc.

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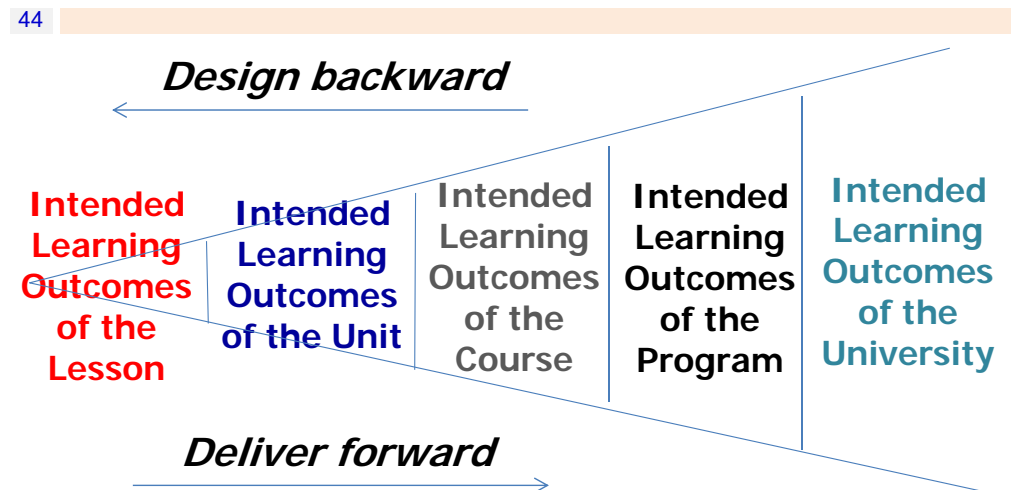
Generic learning outcomes

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- Generic learning outcomes are the transferrable, non discipline specific skills a graduate may achieve through learning that have application in study, work and life contexts. The four broad categories of generic learning outcomes recognised in the AQF are:
- **fundamental skills**, such as literacy and numeracy appropriate to the level and qualification type
 - **people skills**, such as working with others and communication skills
 - **thinking skills**, such as learning to learn, decision making and problem solving
 - **personal skills**, such as self direction and acting with integrity.

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Designing and Delivering Learning Outcomes

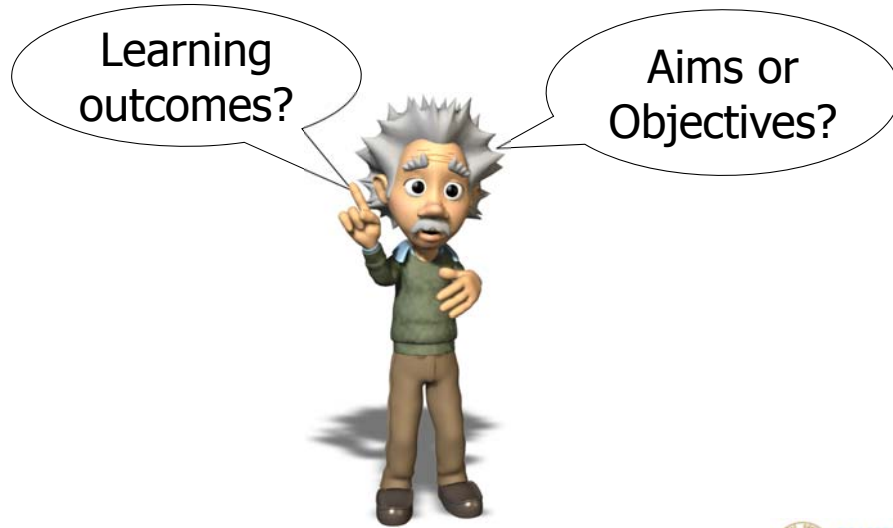


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Aims (Goals), Objectives and LOs

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Aims (Goals), Objectives and LOs

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Aims (Goals) or objectives are more concerned with teaching, the teacher's intentions and the management of learning.

Learning outcomes are concerned with the achievements or results of the learner rather than the intentions of the teacher.

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Translate Aims and Objectives to PLO

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- **Aim** "To implement the undergraduate education to master the concepts of modern biology".
- **Objectives** "To empower community through the application of modern biological innovations"
- **Learning outcome** "Students should be able to **apply** the modern biological innovations underpinning the use of molecular biology to community."

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Easy Syntax..... PLO Statement

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Upon completion of this **programme**, the student will be able to:

- Action verb (Bloom's Taxonomy)
+ **Objects + Modification (T&L / Assessment)**

Example

- Apply + Modern Biology + especially related to molecular biology and nano-biology
- Relate + modern biology + concept to conserve the biodiversity

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Bloom's Taxonomy

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BLOOM'S TAXONOMY provides verbs that are useful for **articulating student learning outcomes** in each of the three domains.



Benjamin Bloom
(1913 – 1999)

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- **Cognitive:** Mental Skills (Knowledge)
- **Affective:** Growth in Feelings or Emotional Areas (Attitude)
- **Psychomotor:** Manual or Physical Skills (Skills)



Cognitive: Verb

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Remembering: Choose, Describe, Define, Identify, Label, List, Locate, Match, Memorize, Name, Recite, Select, State, Count, Draw, Outline, Point.
Understanding: Classify, Defend, Demonstrate, Distinguish, Explain, Express, Extend, Give, Examples, Illustrate, Indicate, Interrelate, Interpret, Judge, Match, Paraphrase, Represent, Restate, Rewrite, Select, Show, Summarize, Tell, Translate, Associate, Compute, Convert, Discuss, Estimate
Applying: Apply, Choose, Dramatize, Explain, Generalize, Judge, Organize, Prepare, Produce, Select, Show, Sketch, Solve, Use, Add, Calculate, Change, Classify, Complete, Compute, Discover, Divide, Examine, Graph, Interpolate, Manipulate, Modify, Operate, Subtract
Analyzing: Analyze, Categorize, Classify, Compare, Differentiate, Select, Distinguish, Identify, Point out, Subdivide, Survey, Arrange, Breakdown, Combine, Design, Detect, Diagram, Develop, Discriminate, illustrate, Utilize
Evaluating: Appraise, Judge, Criticize, Defend, Compare, Assess, Conclude, Contrast, Critique, Determine, Grade, Justify, Measure, Rate
Creating: Combine, Construct, Create, Design, Develop, Formulate, Hypothesize, Invent, Make, Originate, Organize, Plan, Produce, Generate, Group, Integrate, Reconstruct, Revise, Rewrite, Transform

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SOLO TAXONOMY (after Biggs and Collis 1982)

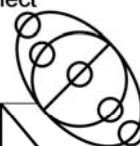
Structure of Observed Learning Outcomes

Define
Identify
Do simple
procedure

Define
Describe
List
Do algorithm
Combine

Compare/contrast
Explain causes
Sequence
Classify
Analyse
Part/whole
Relate
Analogy
Apply
Formulate questions

Evaluate
Theorise
Generalise
Predict
Create
Imagine
Hypothesise
Reflect



• Prestructural	I Unistructural	III Multistructural	IV Relational	V Extended Abstract
Needs assistance	Definition identifies one relevant idea	Definition identifies several relevant ideas	Definition identifies several relevant ideas and links these to the whole	Definition identifies several relevant ideas and links these to the whole. Taken into another context.

Prestructural Unistructural Multistructural Relational Extended abstract

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Example

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- **Programme aims** to produce graduates who possess in-depth **knowledge and skills for scientific decision making**, and are **able to construct models and analyse the problems** accordingly. The possessed knowledge and skill should also be **integrated in the other field areas such as economy, accounting and management.**

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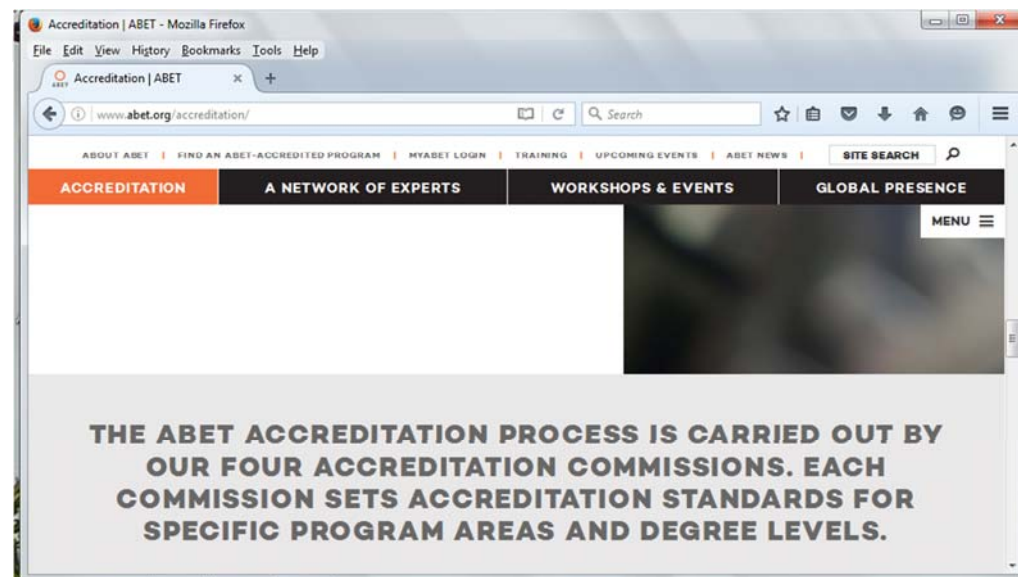


Programme Learning Outcomes

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LOD 1	Apply knowledge of mathematics, probability, statistics, operational research/decision science and operation management, as well as information and communication technology (ICT).
LOD 2	Design, model and solve real world and hypothetical problems, and thus able to analyse and interpret data using contemporary computer tools.
LOD 3	Use quantitative techniques, modelling skills and contemporary decision science tools for industries, public institution and society.
LOD 4	Communicate effectively orally, graphically and in writing, and function in culturally diverse, gender-diverse and multi-disciplinary teams.
LOD 5	Integrate and synthesize organisational issues, and evaluate potential solutions in the broader context of the organisation or society.
LOD 6	Participate in lifelong learning, career advancement activities, and keep up-to-date with knowledge of emerging technologies.
LOD 7	Commercialise tangible and intangible decision making products, in the form of written, oral and electronic media.
LOD 8	Carry out professional and ethical responsibility.
LOD 9	Portray leadership and accountability, and exercising management and decision making skills.

ABET Accreditation



Learning Outcomes for Engineering Programs ABET: 2016-2017 - Proposed Changes

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- Identify, formulate, and solve** engineering problems by applying principles of engineering, science, and mathematics.
- Apply** both analysis and synthesis in the engineering design process, resulting in designs that meet desired needs.
- Develop and conduct** appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- Communicate** effectively with a range of audiences.

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- Recognize** ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- Recognize** the ongoing need for additional knowledge and **locate, evaluate, integrate, and apply** this knowledge appropriately.
- Function** effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.

Learning Outcomes of Masters Degree specified in AQF

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AQF level 9 criteria

Summary	Graduates at this level will have specialised knowledge and skills for research, and/or professional practice and/or further learning
Knowledge	Graduates at this level will have advanced and integrated understanding of a complex body of knowledge in one or more disciplines or areas of practice
Skills	Graduates at this level will have expert, specialised cognitive and technical skills in a body of knowledge or practice to independently: <ul style="list-style-type: none"> analyse critically, reflect on and synthesise complex information, problems, concepts and theories research and apply established theories to a body of knowledge or practice interpret and transmit knowledge, skills and ideas to specialist and non-specialist audiences
Application of knowledge and skills	Graduates at this level will apply knowledge and skills to demonstrate autonomy, expert judgement, adaptability and responsibility as a practitioner or learner

Learning Outcomes of Doctoral Degree specified in AQF

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AQF level 10 criteria

Summary	Graduates at this level will have systematic and critical understanding of a complex field of learning and specialised research skills for the advancement of learning and/or for professional practice
Knowledge	Graduates at this level will have systemic and critical understanding of a substantial and complex body of knowledge at the frontier of a discipline or area of professional practice
Skills	Graduates at this level will have expert, specialised cognitive, technical and research skills in a discipline area to independently and systematically: <ul style="list-style-type: none"> engage in critical reflection, synthesis and evaluation develop, adapt and implement research methodologies to extend and redefine existing knowledge or professional practice disseminate and promote new insights to peers and the community generate original knowledge and understanding to make a substantial contribution to a discipline or area of professional practice
Application of knowledge and skills	Graduates at this level will apply knowledge and skills to demonstrate autonomy, authoritative judgement, adaptability and responsibility as an expert and leading practitioner or scholar

Considerations for Developing PLOs

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- Information need to understand as input:
 - VMV, ULOs, Accreditation & benchmarking, Professional requirements (target what),
 - Stakeholders' requirements (feedbacks what),
 - Understand TQF (translate What)
 - Understand EQA-AUNQA Criteria (What works?)
 - Issue/problem/need is identified (issue what, why do?),
- Development Team
- Do the Strategic Plan

Writing of PLOs

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When writing learning outcomes:

- use only action verbs of **the same level of taxonomy** per learning outcome and target specific aspects of expected performance include action verbs
- avoid vague verbs such as **know** and **understand**
- write in terms of what the learner will do, not what the instructor will do
- for PLOs, check that they **fit within the programme aims and/or TQF1&2**
- SMART characteristics

SMART

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SMART helps to check an LO that required characteristics:

- **Specific:** accurately states what the successful student is expected to achieve
- **Measurable:** open to assessment which accurately assesses whether or not the outcome has been achieved
- **Achievable:** should be within the range of abilities of the student
- **Relevant:** should be relatable to the key aims of the programme
- **Time scaled:** must be achievable within the duration of the study-unit/programme

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Exercise 1: Formulating Programme Learning Outcomes

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Procedures:

- Formulate your Programme Learning Outcomes (PLO) in related to:
 1. TQF/Programme Objectives (Aims)
 2. VMV-MU, VMV-PH, GA
 3. Key Stakeholders' requirements
 2. Bloom's Taxonomy
- Write the statement of PLOs

Documents: D1-D3

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TQF	AUN-QA Criteria	Documents
มคอ 1 มาตรฐานสาขาวิชา	1, 2	ELOs (+5 TQF Domains)
มคอ 2 หลักสูตร	2, 3	Curriculum mapping, Programme specification, Course specification
มคอ 3-4 ประมวลรายวิชา/ภาค สนาม + แผนการสอน	3, 4, 5	Syllabus, Study plan, T&L activities
มคอ 5-6 ประเมินรายวิชา/ ภาคสนาม	5, 10	Course assessment schemes
มคอ 7 ประเมินหลักสูตร	5, 10	Programme assessments, Exit assessments

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Exercise 2: Categorise the Programme Learning Outcomes

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Procedures:

- From the Results of exercise 1 please classify each PLO as **Specific or Generic learning outcomes** and/or **competency**
- Identify the level of Bloom's taxonomy for each PLO

Documents: Results from Exercise 1

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Categories of ELOs

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PLO	Statement	Generic LO	Specific LO	Competency
1			A	
2			A	
3			E	
4		R	E	
5			E	

Blooms' Taxonomy R = Remembering / Understanding
A = Applying / Analyzing
E = Evaluating / Creating

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Exercise 3: Align Stakeholders' Needs or Requirements to the PLOs

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Procedures:

- Aligning the stakeholders' needs or requirements to the formulated PLOs of your programme
- Use the checklist template

Documents:

- PLOs
- Checklist template

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Aligning Stakeholders' Needs to Learning Outcomes

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No	LO	TQF	VMV	Alumni	Employer	ect.
1		X	X			?
2			X			
3		X	X	X		
4		X	X	X	X	
5		X	X		X	
6			X	X		
7		X	X	X	X	
8		X	X	X	X	?

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Thank You
For Your Attention



Time for Questions

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