AUN-QA at Programme Level

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Learning Outcomes

- **Facts and Figures** of AUN and AUN-QA
- **Describe** the Relationship of EdPEx, TQF and AUN-QA
- **Mahidol Model**: Application of AUN-QA for All Programmes
- **Explain** the criteria of AUN-QA at Programme Level

Association of Southeast Asian Nations (ASEAN)

Total population ≈ 600 million in 10 countries

- **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
- **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
**AUN Mandate**

- **Strengthen** the existing network of cooperation among universities in ASEAN and beyond;
- **Promote** collaborative study, research and educational programmes in the priority areas identified by ASEAN;
- **Promote** cooperation and solidarity among scholars, academicians and researchers in the ASEAN Member States;
- **Serve** as the policy-oriented body in higher education in the ASEAN region.

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**http://www.aunsec.org/**

- AUN Southeast Asia Engineering Education Development Network (AUN/SEED-Net) Secretariat: Chulalongkorn University
- AUN Graduate Business and Economics Programme Network (AGBEP) Secretariat: Universitas Gadjah Mada
- AUN Human Rights Education Network (AUN-HREN), Secretariat: Mahidol University
- AUN Inter-Library Online (AUNIL0), Secretariat: Universiti Sains Malaysia
- AUN Credit Transfer System (ACTS), Secretariat: Universitas Indonesia
- AUN Intellectual Property (AUNIP), Secretariat: Chulalongkorn University
- AUN University Social Responsibility & Sustainability (AUN-USR&S) Secretariat: Universiti Kabangsaan Malaysia
- AUN Quality Assurance (AUN-QA) Secretariat: AUN Secretariat
- AUN Health Promotion Network (AUN/HP-Net), Secretariat: AUN-QA

**AUN Thematic Networks**

With strong concrete foundation, we shall never stop serving our stakeholders and help building a strong caring and sharing ASEAN Community.
Higher Education systems by economic status:

<table>
<thead>
<tr>
<th>Economic status</th>
<th>Countries</th>
<th>Higher Education in Focus</th>
</tr>
</thead>
</table>
| Lower income        | Cambodia, Lao PDR, Myanmar, Viet Nam | Higher Education Systems are primarily focused on:  
• Policy reform & System expansion  
• Increasing enrolment  
• Infrastructure development  
• Quality Assurance Development and Implementation |
| Low-middle income   | Indonesia, Malaysia, Philippines, Thailand | Higher Education Systems are increasingly emphasis on:  
• Quality Improvement  
• Internationalisation |
| Middle-income       | Brunei, Singapore, Laos | Higher Education System is developed more independent with global partnership |
| High-income         | Brunei, Singapore         | Higher Education System is well-developed with high international recognition |

Number of Higher Education Institutions in ASEAN

<table>
<thead>
<tr>
<th>Country</th>
<th># (by Year)</th>
<th>Country</th>
<th># (by Year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brunei</td>
<td>4 (by 2008)</td>
<td>Philippines</td>
<td>102 (by 2013)</td>
</tr>
<tr>
<td>Cambodia</td>
<td>1505 (by 2014)</td>
<td>Singapore</td>
<td>5.7 (by 2010)</td>
</tr>
<tr>
<td>Indonesia</td>
<td>259 (by 2014)</td>
<td>Thailand</td>
<td>68 (by 2013)</td>
</tr>
<tr>
<td>Laos</td>
<td>6.8 (by 2010)</td>
<td>Timor-Leste</td>
<td>1.2 (by 2012)</td>
</tr>
<tr>
<td>Malaysia</td>
<td>300 (by 2010)</td>
<td>Vietnam</td>
<td>94 (by 2009)</td>
</tr>
<tr>
<td>Myanmar</td>
<td>54 (by 2014)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

QA Agencies in ASEAN

<table>
<thead>
<tr>
<th>Country</th>
<th>Type</th>
<th>PAASCU</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philippines</td>
<td>PAASCU</td>
<td>1957</td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>PAASCU</td>
<td>1994</td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>PAASCU</td>
<td>1997</td>
<td></td>
</tr>
<tr>
<td>Brunei</td>
<td>PAASCU</td>
<td>2000</td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td>PAASCU</td>
<td>2000</td>
<td></td>
</tr>
<tr>
<td>Singapore</td>
<td>PAASCU</td>
<td>2000</td>
<td></td>
</tr>
<tr>
<td>Cambodia</td>
<td>PAASCU</td>
<td>2003</td>
<td></td>
</tr>
<tr>
<td>Vietnam</td>
<td>PAASCU</td>
<td>2003</td>
<td></td>
</tr>
<tr>
<td>Laos</td>
<td>PAASCU</td>
<td>2008</td>
<td></td>
</tr>
</tbody>
</table>

Diversity of QA Agencies in ASEAN

<table>
<thead>
<tr>
<th>Type</th>
<th>Characteristics of QA Agency</th>
<th>Country</th>
<th>Remarks</th>
</tr>
</thead>
</table>
| 1           | Centralised Governmental Agency | Brunei, Myanmar, Lao PDR, Singapore | • Under Ministry of Education  
• No autonomy |
| 2           | Quasi Governmental Agency      | Cambodia, Indonesia, Malaysia, Thailand, Viet Nam | • Sponsored by National Government  
• Have certain autonomy to manage their QA activities |
| 3           | Non-Governmental Agency        | Philippines | • Full autonomy  
• Not related to any government bodies |
<table>
<thead>
<tr>
<th>National Qualifications Frameworks-comparability-implementation experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaysian Qualifications Framework</td>
</tr>
<tr>
<td>Thai National Qualifications Framework</td>
</tr>
<tr>
<td>Indonesian Qualifications Framework</td>
</tr>
<tr>
<td>Philippines Qualifications Framework</td>
</tr>
<tr>
<td>Brunei D National Qualifications Framework</td>
</tr>
<tr>
<td>Cambodian Qualifications Framework</td>
</tr>
<tr>
<td>Vietnam National Qualifications Framework</td>
</tr>
<tr>
<td>Singapore (Workforce Skills Competency Framework)</td>
</tr>
<tr>
<td>Laos (in progress)</td>
</tr>
<tr>
<td>Myanmar (planning)</td>
</tr>
<tr>
<td>Similar features but not identical</td>
</tr>
<tr>
<td>Objectives</td>
</tr>
<tr>
<td>Scope/sectors</td>
</tr>
<tr>
<td>Levels-complexity</td>
</tr>
<tr>
<td>Learning outcomes-domains</td>
</tr>
<tr>
<td>Credits (learner centric)</td>
</tr>
<tr>
<td>Ownership/responsibility</td>
</tr>
<tr>
<td>Generally underpinned by MOE’s regulations and quality assurance systems</td>
</tr>
<tr>
<td>Accreditation and comparability of qualifications</td>
</tr>
</tbody>
</table>

AUN-QA

Asean University Network Quality Assurance

ASEAN University Network (AUN)

1992  The 4th ASEAN Summit, the call for cooperation in the field of higher education and human resource development

1995  Charter of the ASEAN University Network was signed by the ASEAN Ministers responsible for higher education.

1998  Agreement on the Establishment of the ASEAN University Network was signed by the Presidents, Rectors and Vice-Chancellors of participating universities.

2008  One of ASEAN Sectoral Ministerial Body

AUN-QA network

Year Established:
- Initiated in 1998 by the 4th AUN Board of Trustees Meeting.

Primary Aim:
- To develop Quality Assurance System and Mechanisms to uplift higher education standard among ASEAN Countries.
Recognitions

- Standard QA system practiced within the AUN Member Universities and AUN-QA Associate Members.
- Officially Recognized by the ASEAN Plus Three Senior Officials Meeting on Education (SOM-ED+3) and ASEAN Plus Three Education Ministers Meeting (ASED+3).
- Universities in many countries in ASEAN subscribes to AUN-QA through the demands on AUN-QA Quality Programme Assessment and AUN-QA Training (Tier 1 and 2). AUN-QA serves these demands for AUN Members, AUN-QA Associate Members, and non-AUN Members in ASEAN.

Membership of AUN-QA Network

- **Category A Membership (Members)**
  - All 30 AUN members will automatically become a member of the AUN-QA network and they are approved by the BOT.
- **Category B Membership (Associate Members)**
  - Associate membership is open to any educational institution (non-member) of higher learning that fully meets the membership requirements specified by the AUN-QA network. All associate membership shall be approved by the AUN-QA Council.

Recognitions

- Ministry of the Plus Three Countries recognize AUN-QA as the major Quality System and Standard practiced within ASEAN4.
- EU through the ASEAN-EU Official Channel as the only QA System practiced at the university level in ASEAN.

Eligibility of Associate Membership

- The institution shall be recognised by the national QA agencies and/or the relevant ministry of the country where the business is registered and operated.
- The institution must have been established for at least 10 years, and
- Shall demonstrate QA practices that support AUN-QA network such as have implement QA systems and processes, attending AUN-QA organized training, etc.
- Payment of the **annual fee of US$500** per calendar year.
Structure of AUN-QA

Key Evolution of AUN-QA

Bangkok Accord

AUN-QA Guidelines

AUN-QA Manual

AUN-QA Assessments

AUN-QA Revised Manual

AUN-QA Operating Guidelines

AUN-QA Revised Manual

Initiation

Implementation

Improvement

Current AUN-QA Activities (2000 - present)

<table>
<thead>
<tr>
<th>Type of Activities</th>
<th>Activities</th>
<th>Brief Description</th>
<th>Year Started</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy Directions</td>
<td>AUN-QA Chief Quality Officers’ Meeting</td>
<td>The annual meeting for the Chief Quality Officers among AUN Member Universities to discuss and seek for solutions issues arising from AUN-QA activities, formulate directions and policies, implement the engagement plan with AUN-QA partners and stakeholders, and continue to improve the AUN-QA System and Mechanism</td>
<td>2000 (active)</td>
</tr>
</tbody>
</table>

The AUN-QA has developed a mechanism to conduct an assessment at programme level.

- The AUN-QA Guidelines and Manual was developed and have served well as a tool for AUN member universities to implement and assess their quality and quality assurance system since its first publication in 2004.
- The first AUN-QA Quality Assessment was initiated in 2007 at Universiti Malaya, Malaysia.
- At the end of 2010, to further enhance and sustain quality assurance practices and quality in higher education, AUN establishes an AUN-QA Documentation Review Committee and Procedure to keep its documents updated and relevant.
- The Guide to AUN Actual Quality Assessment at Programme Level was developed and endorsed by the AUN Board of Trustees Meeting in July 2010. The guidebook has been used in AUN-QA practice until nowadays.
Current AUN-QA Activities (2000 - present)

| Capacity Building | AUN-QA Training Course for Accomplishing Programme Assessment (Tier1) | The AUN-QA decides to extend the outreach through other non-Member Universities in the region. The training introduces the AUN-QA System and how to accomplish the programme assessment at programme level. The course aims to provide professionals who are in charge of quality assurance at the programme level and/or institutional level practiced within the university. | 2011 (active) |
| Capacity Building | AUN-QA Assessor Training Workshop (Tier2) | The objective of the Tier 2 training is to equip the trainees (who have completed the Tier 1 Training) with knowledge capable of conducting AUN-QA Quality Assessment. | 2013 (active) |

Current AUN-QA Activities (2000 - present)

<table>
<thead>
<tr>
<th>Type of Activities</th>
<th>Activities</th>
<th>Brief Description</th>
<th>Year Started</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity Building</td>
<td>ASEAN-QA DIES Project and ASEAN-QA Project Phase II</td>
<td>A joint initiative by 7 Partners’ aims at strengthening the capacity for internal and external quality assurance (QA) through dialogue and training events for ASEAN-QA professionals based on regional standards. Since the project inception, 6 training workshops, utilising the AUN-QA System, were carried out for IQA and EQA. In 2013, the Project has conducted 22 site visits at 21 universities in 10 different countries. In 2014, the project is on the Phase II stage, aiming to further produce the IQA trainees.</td>
<td>Phase I: 2011 – 2013  Phase II: 2014-2016 (active)</td>
</tr>
</tbody>
</table>

Current AUN-QA Activities (2000 - present)

| Capacity Building | AUN-QA sees the needs of QA development in Cambodia, Lao PDR, and Myanmar (CLM Countries). With the financial support from Asian Development Bank, AUN-QA has conducted AUN-QA Training in CLM Countries in order to Enhance and strengthen the knowledge on QA system implementation and management and build up pool of qualified University QA personnel team in CLM countries. |
| --- | --- | --- |
| • The first phase of the project was in 2012 and 6 training workshops were carried out in 3 countries. | • The second and current phase (2014-2016) will be to further the QA development in these 3 countries. | • The on-site consultancy visits coupled with the trainings will be the key methodology to support the QA system development within the university. | • The QA Generic QA Handbook will also be developed and translated into local language, outreaching to the other universities within these targeted countries. | Phase I: 2011 – 2013  Phase II: 2014-2016 (active) |

Purposes of the AUN-QA Assessment

- To have an **agreed quality framework and criteria of QA** in Higher Education in ASEAN (to anticipate ASEAN Community 2015)
- To **strengthen internal QA and improve the quality**
- Recognition of education programme across **member** universities (for credit transfers, joint degree, mobility of staff and students, etc)
- To **uplift the quality** of the ASEAN HE in education, research and services
AUN-QA Actual Assessment at Programme Level
(2007-2015: **121** programmes, **27** Uni, **8** Countries)

No. of programme assessed by country
(2007-2015: **121** programmes, **27** Uni, **8** Countries)

Educational Quality Assessment System

<table>
<thead>
<tr>
<th>QA System</th>
<th>Assessment Level</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>ONESQA</td>
<td>University level</td>
<td>ONES - Every 5 Yrs</td>
</tr>
<tr>
<td>CHEQA</td>
<td>University level</td>
<td>OHE - Annually</td>
</tr>
<tr>
<td>EdPEx</td>
<td>Institutional level</td>
<td>MU-IQA - Annually</td>
</tr>
<tr>
<td>AUN-QA</td>
<td>Programme Level</td>
<td>Implemented 2015</td>
</tr>
<tr>
<td>CUPT</td>
<td>Institutional level?</td>
<td>-</td>
</tr>
<tr>
<td>ONESQA</td>
<td>Programme Level?</td>
<td>-</td>
</tr>
</tbody>
</table>

AUN-QA and EdPEx
Go Together for Performance (Excellence) Improvement
MU Performance Excellence ...

- World Class Ranking
- International Recognition
- Sustainability
- The best in Thailand
- etc...

How is your Organization Performance ..?

Basic Organization Improvement System

Performance Evaluation + GAP 

VISION

Organization Improvement

Quality assessment

Stakeholders’ Feedback
Education Criteria for Performance Excellence

**EdPEx 2015-2016**

A systems perspective for managing your organization to achieve performance excellence.

- EdPEx empower your organization to *reach your goals*, improve student learning and other results, and become *more competitive* by aligning your plans, processes, decisions, people, actions, and results.
- The Criteria give you the *tools* you need to examine all parts of your management system and *improve processes and results* while keeping the whole organization in mind.

Overview Diagram

- The *Organizational Profile* is now the background that touches every aspect of your performance system.
- The key role of *integration* emphasizes that *no single piece* of the system can operate independently.
- The overview diagram now includes the key role of the *core values and concepts* as the basis of your leadership and performance management system.
Core Values and Concepts

1. Systems perspective
2. Visionary leadership
3. Student-centered excellence
4. Valuing people
5. Organizational learning and agility
6. Focus on success
7. Managing for innovation
8. Management by fact
9. Societal responsibility
10. Ethics and transparency
11. Delivering value and results

Outcomes of using EdPEx as a guide

EdPEx: Institutional assessment

Organizational Profile
- Leadership
- Strategy
- Customers
- Measurement, Analysis, and Knowledge Management
- Workforce
- Operations
- Results
  - Student Learning and Process Results
  - Customer-Focused Results
  - Workforce-Focused Results
  - Leadership and Governance Results
  - Budgetary, Financial, and Market Results
Road to Organizational Performance Excellence

What is your Org VISION? How can you get there?

What do your play role? How?

AUN-QA Model at Programme Level

OBE Framework
PDCA Approach to Assessment
Designed for Improvement to Best practice

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What is outcome-based education? (D0)

- OBE is an educational approach considered in planning, implementing and evaluation of curricula rather than an event occurring in the curricula.
- It promises high level of learning for all students based on the achievement of clearly unambiguous outcomes with consideration to the appropriateness of each learner's development level and assuring active and experienced-based learning.
- It provides the learner with the destination of the educational journey before voyaging.

(Eldeeb R. and Shatakumari N, 2013)

OBE Concept

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

“Product (ELOs) defines process (SCL)”


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”

OBE Concept

Expected Learning Outcomes

Student-Centered Learning

Learning Activities

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.
OBE Model Designed Based on ELOs

- Learners is the centre of designed model (OBE).
- Expected Learning Outcomes should be formulated first in our design.
- Assessment task and teaching and learning activities are designed constructively align with the leaning outcomes.

Key Concepts and Principles of OBE

- 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)

Making OBE work

- What the student is to learn must be clearly identified
- The student’s progress is based on demonstrated achievement
- Multiple instructional and assessment strategies need to be available to meet the needs of each student
- Adequate time and assistance need to be provided so that each student can reach the maximum potential

(Towers, 1996)
AUN-QA Criteria at Programme Level Version 3, 2015

Based on OBE Framework
Criteria

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

The first row

How the expected learning outcomes are translated into the programme and how they can be achieved via teaching and learning approach and student assessment.

The second row

The second row considers the “input” into the process including academic and support staff; student quality and support; and facilities and infrastructure.
Third row

The third row addresses the quality enhancement of the programme covering curriculum design and development, teaching and learning, student assessment, quality of support services and facilities, and stakeholders’ feedback.

The fourth row

The fourth row focuses on the output of the programme including pass rates and dropout rates, the average time to graduate, employability of the graduates, research activities and stakeholders’ satisfaction.

The final column

The final column addresses the achievements of the expected learning outcomes and the programme.

Stakeholders Needs

Expected Learning Outcomes (ELOs)

Programme Specification

Teaching and Learning Approach

Student Assessment

Academic Staff Quality

Support Staff Quality

Student Quality and Support

Facilities and Infrastructure

Output

Quality Assurance and (Inter)national benchmarking

Stakeholders (needs)

- Students
- Academic Staff
- Alumni
- Employers

(Inter)national benchmarking (requirements)

- TQF
- VMV
- Labour market
- Professional body

Closed-loop process for feedback and continuous improvement

Expected Learning Outcomes (ELOs)

- What the student should be able to know, understand and to do at the end of the programme.

Input

- Academic Staff Quality
- Support Staff Quality
- Student Quality and Support
- Facilities and Infrastructure

Process

- Curriculum Design and Development
- Programme and Course Specification
- Teaching and Learning Activities
- Student Assessment Schemes
- Quality of Support Services and Facilities
- Stakeholders’ Feedback

Output

- pass rates and dropout rates
- average time to graduate
- employability of the graduates
- research activities
- stakeholders’ satisfaction
Expected Learning Outcomes (ELOs)
- What the student should be able to know, understand and to do at the end of the programme.

(Inter)national benchmarking (requirements)
- TQF
- VMV
- Labour market
- Professional body

Process
- Curriculum Design and Development
- Programme and Course Specification
- Teaching and Learning Activities
- Student Assessment Schemes
- Quality of Support Services and Facilities
- Stakeholders’ Feedback

Output
- pass rates and dropout rates
- average time to graduate
- employability of the graduates
- research activities
- stakeholders’ satisfaction

Feedback

Stakeholders (needs)
- Students
- Academic Staff
- Alumni
- Employers

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Relationship of Criteria and Tasks
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

Resources - 6, 7, 8, 9, 10
Stakeholders - 8, 11

หลักการสำคัญของ TQF
1. เป็นเครื่องมือในการผนวจนโยบายการพัฒนาคุณภาพและมาตรฐาน การจัดการศึกษาตามที่กำหนดไว้ใน พ.ร.บ. การศึกษาแห่งชาติ ในส่วนที่เกี่ยวกับมาตรฐานการอุดมศึกษาและการประกันคุณภาพการศึกษาสู่การปฏิบัติในสถาบันอุดมศึกษาแห่งประเทศไทย
2. มุ่งเน้นที่ผลการเรียนรู้ (Learning Outcomes) 5 ด้าน ซึ่งเป็นมาตรฐานขั้นต่ำขั้นพื้นฐานคุณภาพเพื่อประกันคุณภาพ ปณิธาน
3. มุ่งประมวลกฎหมายและประกาศต่างๆ ที่เกี่ยวกับเรื่องหลักสูตรและการจัดการเรียนการสอนเข้าไว้ด้วยกันและเชื่อมโยงให้เป็นเรื่องเดียวกัน
National Qualifications Framework

- NQF means an instrument for the classification of qualifications according to a set of criteria for specified levels of learning achieved, which aims to integrate and coordinate national qualifications subsystems and improve the transparency, access, progression and quality of qualifications in relation to the labour market and civil society.


Malaysian Qualifications Framework (MQF)

The Malaysian Qualifications Framework (MQF) classifies higher education qualifications based on a set of nationally agreed and internationally benchmarked set of criteria that clarifies the academic levels, learning outcomes and credit system based on student academic load. It integrates all national qualifications and provides pathways that link them systematically.

Supporting Outcomes-Based education.
Learner centred /LLL
Each level – generic learning outcomes descriptors
8 domains

1. Knowledge
2. Values, attitudes and professionalism
3. Problem solving and scientific skills
4. Managerial and entrepreneurial skills
5. Communications, leadership and team skills
6. Information management and lifelong learning skill
7. Social skills and responsibilities
8. Practical skills

AUN-QA Model at program level:
The principles-based assessment system

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Principles-Based</th>
<th>Rules-Based</th>
</tr>
</thead>
<tbody>
<tr>
<td>View of Quality System</td>
<td>Integrated &amp; Systemic</td>
<td>Separated &amp; Add-on</td>
</tr>
<tr>
<td>Focus</td>
<td>Improvement</td>
<td>Compliance</td>
</tr>
<tr>
<td>Feedback</td>
<td>Formative</td>
<td>Summative</td>
</tr>
<tr>
<td>Improvement Objective</td>
<td>Continuous &amp; Contextualisation</td>
<td>Static &amp; Standardisation</td>
</tr>
<tr>
<td>Reference</td>
<td>Framework &amp; Non-Prescriptive</td>
<td>Standard &amp; Prescriptive</td>
</tr>
<tr>
<td>Assessors</td>
<td>Skilled Peers</td>
<td>Technical Experts</td>
</tr>
<tr>
<td>Assessment Climate</td>
<td>Mutual Respect &amp; Trust</td>
<td>Fearful and Suspicious</td>
</tr>
<tr>
<td>Motivation for Assessment</td>
<td>Intrinsic</td>
<td>Extrinsic</td>
</tr>
<tr>
<td>Methodology</td>
<td>Assessment or Evaluation</td>
<td>Audit</td>
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</tbody>
</table>

Principles-based system has a more gradual startup but a more enduring and sustainable gains in quality improvement over a longer time period than Rules-based system

Adapted from Lindsay H Heywood, Principles-based accreditation: the way forward?, 2007
1. Expected Learning Outcomes

Requirements (4)

1. The formulation of the expected learning outcomes takes into account and reflects the vision and mission of the institution. The vision and mission are explicit and known to staff and students.

2. The programme shows the expected learning outcomes of the graduate. Each course and lesson should clearly be designed to achieve its expected learning outcomes which should be aligned to the programme expected learning outcomes.

3. The programme is designed to cover both subject specific outcomes that relate to the knowledge and skills of the subject discipline; and generic (sometimes called transferable skills) outcomes that relate to any and all disciplines e.g. written and oral communication, problem-solving, information technology, teambuilding skills, etc.

4. The programme has clearly formulated the expected learning outcomes which reflect the relevant demands and needs of the stakeholders.
1. Expected Learning Outcomes (3)

<table>
<thead>
<tr>
<th></th>
<th>Expected Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>The expected learning outcomes have been clearly formulated and aligned with the vision and mission of the university. [1,2]</td>
</tr>
<tr>
<td>1.2</td>
<td>The expected learning outcomes cover both subject specific and generic (i.e. transferable) learning outcomes. [3]</td>
</tr>
<tr>
<td>1.3</td>
<td>The expected learning outcomes clearly reflect the requirements of the stakeholders. [4]</td>
</tr>
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</table>

Programme (Expected) learning outcomes

- The PLO (ELO) is the starting point of the Programme design and improvement.
- ELO is what the student should be able to know, understand and to do at the end of the programme.
- EOLs should be formulated from the needs of the stakeholders.
- ELOs should be written in a way where learning is translated into observable and measurable results which can be demonstrated and assessed.

Learning Outcomes (EQF 2008)

- Learning outcomes means statements of what a learner knows, understands and is able to do on completion of a learning process, which are defined in terms of knowledge, skills and competence.

- 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 (involving the use of logical, intuitive and creative thinking) or practical (involving manual dexterity and the use of methods, materials, tools and instruments).
• 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.

Categories of Learning Outcomes

• 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.

Generic learning outcomes

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.

Aims (Goals), Objectives and LOs

Learning outcomes? Aims or Objectives?
Aims (Goals), Objectives and LOs

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.

Translate Aims and Objectives to PLO

- **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.

Easy Syntax..... PLO Statement

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

Bloom’s Taxonomy

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

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

Benjamin Bloom (1913 – 1999)
Bloom’s Taxonomy (Cognitive)

Cognitive: Mental Skills (Knowledge)

- **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.

Affective: Feelings or Emotional Areas (Attitude)

- **Receiving phenomena**: asks, chooses, describes, follows, gives, holds, identifies, locates, names, points to, selects, sits, erects, replies, uses.
- **Responding to phenomena**: answers, assists, aids, complies, conforms, discusses, greets, helps, labels, performs, practices, presents, reads, recites, reports, selects, tells, writes.
- **Valuing**: completes, demonstrates, differentiates, explains, follows, forms, initiates, invites, joins, justifies, proposes, reads, reports, selects, shares, studies, works.
- **Organization**: adheres, alters, arranges, combines, compares, completes, defends, explains, formulates, generalizes, identifies, integrates, modifies, orders, organizes, prepares, relates, synthesizes.
- **Internalizing values**: acts, discriminates, displays, influences, listens, modifies, performs, practices, proposes, qualifies, questions, revises, serves, solves, verifies.

Psychomotor: Manual or Physical Skills (Skills)

- **Perception**: chooses, describes, detects, differentiates, distinguishes, identifies, isolates, relates, selects.
- **Set**: begins, displays, explains, moves, proceeds, reacts, shows, states, volunteers.
- **Guided response**: copies, traces, follows, react, reproduce, responds.
- **Mechanism**: assembles, calibrates, constructs, dismantles, displays, fastens, fixes, grinds, heats, manipulates, measures, mends, mixes, organizes, sketches.
- **Complex overt response**: Verbs are the same as Mechanism, but will have adverbs or adjectives that indicate that the performance is quicker, better, more accurate, etc.
- **Adaptation**: adapts, alters, changes, rearranges, reorganizes, revises, varies.
- **Origination**: arranges, builds, combines, composing, composes, constructs, creates, designs, initiate, makes, originates.
Business Programme

Students will be able to:

- **Work** in groups and be part of an effective team.
- **Communicate** business knowledge both orally and written.
- **Recognize and respond** appropriately to an ethical and regulatory dilemma.
- **Recognize and diagnose** accounting problems.
- **Demonstrate** disciplinary competence in a field of business.

Humanities and Fine Arts:

- Demonstrate fluency with formal vocabulary, artistic techniques and procedures of two dimensional and three-dimensional art practice.
- Demonstrate in-depth knowledge of artistic periods used to interpret works of art including the historical, social and philosophical contexts.
- Critique and analyze works of art and visual objects.
- Identify musical elements, take them down at dictation, and perform them at sight.
- Communicate both orally and verbally about music of all genres and styles in a clear and articulate manner.
- Able to analyze and interpret scripts.
Learning Outcomes for Engineering Programs
ABET: 2016-2017 - Proposed Changes

1. **Identify, formulate, and solve** engineering problems by applying principles of engineering, science, and mathematics.

2. **Apply** both analysis and synthesis in the engineering design process, resulting in designs that meet desired needs.

3. **Develop and conduct** appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

4. **Communicate** effectively with a range of audiences.

5. **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.

6. **Recognize** the ongoing need for additional knowledge and **locate, evaluate, integrate, and apply** this knowledge appropriately.

7. **Function** effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.

MPA – SPIA School of Public & International Affairs

- To lead and manage in public governance
- To participate in and contribute to the public policy process
- To analyze, synthesize, think critically, solve problems and make decisions
- To articulate and apply a public service perspective
- To communicate and interact productively with a diverse and changing workforce and citizenry.

PLOs of PhD – USC Price School of Public Policy

- To identify a research problem whose solution will be a valuable contribution to the field
- To review and critique the literature in an area of study in a manner that demonstrates mastery of the pertinent research
- To effectively apply methods of the field to solve research problems
- To interpret data and to draw well supported conclusions from the data
- To communicate research effectively in writing and in oral presentations

http://www.grad.ncsu.edu/program_review/ObjectivesOutcomes.aspx?id=34
Learning Outcomes of Masters Degree specified in AQF

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<tr>
<th>AQF level 9 criteria</th>
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<tr>
<td><strong>Summary</strong></td>
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<td><strong>Skills</strong></td>
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<tr>
<td><strong>Application of knowledge and skills</strong></td>
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</tbody>
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CLW 2016

Learning Outcomes of Doctoral Degree specified in AQF

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<td><strong>Skills</strong></td>
</tr>
<tr>
<td><strong>Application of knowledge and skills</strong></td>
</tr>
</tbody>
</table>

CLW 2016

Considerations for Developing PLOs

- Information need to understand as input:
  1. VMV, ULOs, Accreditation & benchmarking, Professional requirements (target what),
  2. Stakeholders’ requirements (feedbacks what),
  3. Understand IQF (translate What)
  4. Understand EQA-QA Criteria (What works?)
  5. Issue/problem/need is identified (issue what, why do?),
- Development Team
- Do the Strategic Plan

Aligning Stakeholders’ Needs to Learning Outcomes

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F – Fully fulfilled
M – Moderately fulfilled
P – Partially fulfilled

CLW 2016
Categories of ELOs

<table>
<thead>
<tr>
<th>PLO</th>
<th>Statement</th>
<th>Generic LO</th>
<th>Specific LO</th>
<th>Competency</th>
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<td>E</td>
<td>E</td>
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</table>

**Blooms’ Taxonomy**
- **R** = Remembering / Understanding
- **A** = Applying / Analyzing
- **E** = Evaluating / Creating

<table>
<thead>
<tr>
<th>TQF</th>
<th>AUN-QA Criteria</th>
<th>Documents</th>
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<tr>
<td>1</td>
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<td>ELOs (+5 TQF Domains)</td>
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<td>Curriculum mapping, Programme specification, Course specification</td>
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<tr>
<td>3</td>
<td>4, 5</td>
<td>Syllabus, Study plan, T&amp;L activities</td>
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<tr>
<td>5</td>
<td>10</td>
<td>Course assessment schemes</td>
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<tr>
<td>7</td>
<td>5, 10</td>
<td>Programme assessments, Exit assessments</td>
</tr>
</tbody>
</table>

2. Programme specification

- The programme specification is a set of documents that describes the study programme offered and usually encompasses the following items:
  - a summary of programme aims and intended outcomes;
  - an outline of the course structure;
  - a matrix showing how the programme learning outcomes are achieved through the courses; and
  - a set of course specifications

2. Programme Specification (Requirements)

1. The Institution is recommended to publish and communicate the programme and course specifications for each programme it offers, and give detailed information about the programme to help stakeholders make an informed choice about the programme.

2. Programme specification including course specifications describes the expected learning outcomes in terms of knowledge, skills and attitudes. They help students to understand the teaching and learning methods that enable the outcome to be achieved; the assessment methods that enable achievement to be demonstrated; and the relationship of the programme and its study elements.
## 2. Programme Specification (3)

### 2 Programme Specification

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>2.1</td>
<td>The information in the programme specification is comprehensive and up-to-date. [1,2]</td>
</tr>
<tr>
<td>2.2</td>
<td>The information in the course specification is comprehensive and up-to-date. [1,2]</td>
</tr>
<tr>
<td>2.3</td>
<td>The programme and course specifications are communicated and made available to the stakeholders. [1,2]</td>
</tr>
</tbody>
</table>

---

The following information should be included:

- Awarding body/institution
- Teaching institution (if different)
- Details of the accreditation by a professional or statutory body
- Name of the final award
- Programme title
- Expected Learning outcomes of the programme
- Admission criteria or requirements to the programme
- Relevant subject benchmark statements and other external and internal reference points used to provide information on programme outcomes
- Programme structure and requirements including levels, courses, credits, etc.
- Date on which the programme specification was written or revised
Course specification

The information to be included is listed below.

- Course title
- Course requirements such as pre-requisite to register for the course, credits, etc.
- Expected learning outcomes of the course in terms of knowledge, skills and attitudes
- Teaching, learning and assessment methods to enable outcomes to be achieved and demonstrated
- Course description and outline or syllabus
- Details of student assessment
- Date on which the course specification was written or revised.

3. Programme Structure and Content

Requirements (6)

1. The curriculum, teaching and learning methods and student assessment are constructively aligned to achieve the expected learning outcomes.

2. The curriculum is designed to meet the expected learning outcomes where the contribution made by each course in achieving the programme’s expected learning outcomes is clear.

3. The curriculum is designed so that the subject matter is logically structured, sequenced, and integrated.

4. The curriculum structure shows clearly the relationship and progression of basic courses, the intermediate courses, and the specialised courses.

5. The curriculum is structured so that it is flexible enough to allow students to pursue an area of specialisation and incorporate more recent changes and developments in the field.

6. The curriculum is reviewed periodically to ensure that it remains relevant and up-to-date.
3. Programme Structure and Content (3)

3 Programme Structure and Content

3.1 The curriculum is designed based on constructive alignment with the expected learning outcomes. [1]

3.2 The contribution made by each course to achieve the expected learning outcomes is clear. [2]

3.3 The curriculum is logically structured, sequenced, integrated and up-to-date. [3,4,5,6]

Constructive Alignment

- The **curriculum should be designed** so that the teaching activities, **learning activities** and assessment tasks are **co-ordinated with** the programme learning outcomes.
- Biggs (2003) refers to this type of process as involving **constructive alignment**.
  - The **constructive** part refers to the type of learning and what the learner does.
  - The **alignment** part refers to what the teacher does.

Four basic elements involved in the constructive alignment of any programme or course

- **Clearly defining the learning outcomes**
  - Curriculum is designed or pitched to align to the level of the learning outcomes
  - Selecting appropriate teaching and learning methods that are likely to ensure that the learning outcomes are achieved.
  - Using the appropriate assessment tools to assessing the student learning outcomes and checking to see how well they match with what was intended.
### Curriculum Mapping: The Process

- Focused on curriculum and program learning outcomes
- Two-dimensional matrix representing courses on one axis and outcomes on the other
- Identify which courses address which learning outcomes

### Why do curriculum mapping?

- What we are expected to achieve through the mapping:
  - Alignment (within a program, between general education and institutional goals, etc.)
  - Identifying where and how particular outcomes are expected, explicitly taught for, and assessed (Ewell, 2013)
  - Backwards design the curriculum
  - Understand the nature and role of course pre-requisites
  - Mapping as a lens – it is a way of seeing organizational structure

### Curriculum Mapping of Courses and PLOs

<table>
<thead>
<tr>
<th>CODE</th>
<th>NAME OF COURSE</th>
<th>CREDITS</th>
<th>LO1</th>
<th>LO2</th>
<th>LO3</th>
<th>LO4</th>
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Specialized skills (specialized courses)
Relationship Between Programme and Course Learning Outcomes

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Bloom’s Taxonomy

- R = Remembering / Understanding
- A = Applying / Analyzing
- E = Evaluating / Creating

Curriculum matrix, example 1

<table>
<thead>
<tr>
<th>No</th>
<th>Code</th>
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<td>6</td>
<td>CHS12006</td>
<td>Thermodynamics</td>
<td>3</td>
<td>5 1 1 1 1 1 1 1 5 3</td>
</tr>
<tr>
<td>7</td>
<td>CHS12007</td>
<td>Heat Transfer</td>
<td>3</td>
<td>5 1 1 1 1 1 1 1 5 3</td>
</tr>
<tr>
<td>8</td>
<td>CHS12008</td>
<td>Chemical Engineering Mathematics</td>
<td>3</td>
<td>5 1 1 5 1 1 5 1</td>
</tr>
<tr>
<td>9</td>
<td>CHS12002</td>
<td>Mass Transfer</td>
<td>3</td>
<td>5 1 1 5 1 1 5 1</td>
</tr>
<tr>
<td>10</td>
<td>CHS12013</td>
<td>Unit Operation Lab 1</td>
<td>3</td>
<td>5 1 1 5 1 1 5 1</td>
</tr>
<tr>
<td>11</td>
<td>CHS12009</td>
<td>Unit Operation Lab 2</td>
<td>3</td>
<td>5 1 1 5 1 1 5 1</td>
</tr>
<tr>
<td>12</td>
<td>CHS12010</td>
<td>Chemical Reactor Engineering</td>
<td>3</td>
<td>5 1 1 5 1 1 5 1</td>
</tr>
<tr>
<td>13</td>
<td>CHS12009</td>
<td>Process Control</td>
<td>3</td>
<td>5 1 1 5 1 1 5 1</td>
</tr>
<tr>
<td>14</td>
<td>CHS12001</td>
<td>Chemical Process Simulation</td>
<td>3</td>
<td>5 1 1 5 1 1 5 1</td>
</tr>
<tr>
<td>15</td>
<td>CHS12002</td>
<td>Natural Gas Processing</td>
<td>3</td>
<td>5 1 1 5 1 1 5 1</td>
</tr>
<tr>
<td>16</td>
<td>CHS12001</td>
<td>Communication Skill</td>
<td>3</td>
<td>5 1 1 5 1 1 5 1</td>
</tr>
<tr>
<td>17</td>
<td>CHS12003</td>
<td>Project Management</td>
<td>3</td>
<td>5 1 1 5 1 1 5 1</td>
</tr>
<tr>
<td>18</td>
<td>CHS12004</td>
<td>Research Methods</td>
<td>3</td>
<td>5 1 1 5 1 1 5 1</td>
</tr>
<tr>
<td>19</td>
<td>CHS12005</td>
<td>Capstone</td>
<td>3</td>
<td>5 1 1 5 1 1 5 1</td>
</tr>
<tr>
<td>20</td>
<td>CHS12005</td>
<td>Process Equipment Design</td>
<td>3</td>
<td>5 1 1 5 1 1 5 1</td>
</tr>
<tr>
<td>21</td>
<td>CHS12006</td>
<td>Chemical Plant and Product Design</td>
<td>3</td>
<td>5 1 1 5 1 1 5 1</td>
</tr>
<tr>
<td>22</td>
<td>CHS12001</td>
<td>Seminar</td>
<td>3</td>
<td>5 1 1 5 1 1 5 1</td>
</tr>
<tr>
<td>23</td>
<td>CHS40001</td>
<td>On the 5th Training</td>
<td>3</td>
<td>5 1 1 5 1 1 5 1</td>
</tr>
<tr>
<td>24</td>
<td>CHS40002</td>
<td>Final Project</td>
<td>3</td>
<td>5 1 1 5 1 1 5 1</td>
</tr>
<tr>
<td>25</td>
<td>CHS40001</td>
<td>Composite Material</td>
<td>3</td>
<td>5 1 1 5 1 1 5 1</td>
</tr>
<tr>
<td>26</td>
<td>CHS40002</td>
<td>Applied Thermodynamics</td>
<td>3</td>
<td>5 1 1 5 1 1 5 1</td>
</tr>
</tbody>
</table>

Note: The figures in the ELO column relate to:
- 1 Not directly related to ELO
- 2 Quite related to ELO
- 3 Related to ELO
- 4 Closely related to ELO
- 5 Specifically related to ELO

Curriculum matrix, example 2

- I (Introduce) Concepts/principles are merely presented.
- E (Emphasize) Concepts/principles are reinforced and initially applied.
- P (Practice) Concepts/principles are applied with supervision.
- D (Demonstrate) Concepts/principles are applied with minimal supervision.

Skill Matrix (PhD Research)

<table>
<thead>
<tr>
<th>PhD Requirements</th>
<th>PLO 1 Methods</th>
<th>PLO 2 Communication</th>
<th>PLO 3 Research</th>
<th>PLO 4 Professional performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required courses</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qualifying Exam</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dissertation</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Seminar requirements</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final Exam</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Learning Activities
Curriculum Mapping

Rader plot of courses A, B, and C mapped to the 10 PLOs

Dintzner MW, et al; 2015

Radar plot of Core PLO 1 mapped to all courses (shown as course numbers around the perimeter of the plot)

MD Programme

Duke-NUS Graduate Medical School Singapore
4. Teaching and Learning Approach

Requirements (6)

1. The teaching and learning approach is often dictated by the educational philosophy of the university. Educational philosophy can be defined as a set of related beliefs that influences what and how students should be taught. It defines the purpose of education, the roles of teachers and students, and what should be taught and by what methods.

2. Quality learning is understood as involving the active construction of meaning by the student, and not just something that is imparted by the teacher. It is a deep approach of learning that seeks to make meaning and achieve understanding.

3. Quality learning is also largely dependent on the approach that the learner takes when learning. This in turn is dependent on the concepts that the learner holds of learning, what he or she knows about his or her own learning, and the strategies she or he chooses to use.

4. Quality learning embraces the principles of learning. Students learn best in a relaxed, supportive, and cooperative learning environment.

5. In promoting responsibility in learning, teachers should:
   a. create a teaching-learning environment that enables individuals to participate responsibly in the learning process; and
   b. provide curricula that are flexible and enable learners to make meaningful choices in terms of subject content, programme routes, approaches to assessment and modes and duration of study.
4. Teaching and Learning Approach

Requirements (6)
6. The teaching and learning approach should promote learning, learning how to learn and instil in students a commitment of lifelong learning (e.g., commitment to critical inquiry, information-processing skills, a willingness to experiment with new ideas and practices, etc.).

Where can you find educational philosophy?
- Institutional mission and disciplinary trends
- A syllabus (assignments, format, content, expectations, texts, assignments, grading and assessment)
- In-classroom environment (diversity of methods, level of interaction, quality of feedback, intercultural sensitivity)

Four basic elements involved in the constructive alignment of any programme or course

Clearly defining the learning outcomes
Curriculum is designed or pitched to align to the level of the learning outcomes
Selecting appropriate teaching and learning methods that are likely to ensure that the learning outcomes are achieved.
Using the appropriate assessment tools to assessing the student learning outcomes and checking to see how well they match with what was intended.
Subject: .................................

CLO 1: .................................
CLO 2: .................................
CLO 3 .................................

<table>
<thead>
<tr>
<th>Content</th>
<th>CLO No.</th>
<th>Teaching method</th>
<th>Assessment method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tips on Teaching and Learning Approach

Tips on choosing instructional strategies and methods
- Match methods to learning outcome
- Match learner characteristics and expectations
- Policy of university
- Teacher’s skills & comfort level
- Time available
- Ensuring variety
- Ensuring interaction
- Logistical constraints (e.g. cost, space, etc)

5. Student Assessment

ELO  →  Programme structure and Content
   →  Course Learning Outcomes
   →  Teaching and Learning Approach
   →  Assessment Schemes
   →  Programme Specification

5. Student Assessment (5)

Requirements (8)
1. Assessment covers:
   - New student admission
   - Continuous assessment during the course of study
   - Final/exit test before graduation
2. In fostering constructive alignment, a variety of assessment methods should be adopted and be congruent with the expected learning outcomes. They should measure the achievement of all the expected learning outcomes of the programme and its courses.
5. Student Assessment

Requirements (8)

3. A range of assessment methods is used in a planned manner to serve diagnostic, formative, and summative purposes.
4. The student assessments including timelines, methods, regulations, weight distribution, rubrics and grading should be explicit and communicated to all concerned.
5. Standards applied in assessment schemes are explicit and consistent across the programme.

5.1 The student assessments are constructively aligned to the achievement of the expected learning outcomes. [1,2]

5.2 The student assessments including timelines, methods, regulations, weight distribution, rubrics and grading are explicit and communicated to students. [4,5]

5.3 Methods including assessment rubrics and marking schemes are used to ensure validity, reliability and fairness of student assessment. [7]

5.4 Feedback of student assessment is timely and helps to improve learning. [3]

5.5 Students have ready access to appeal procedure. [8]
Student Assessment

It is also important that assessment aligns with learning outcomes. In an outcomes-based learning environment the focus is on helping a variety of learners achieve learning outcomes.

By definition, learning outcomes are performance-based. Learners must go beyond knowing to being able to show what they know.

In short, well planned assessments allow learners to demonstrate that they have achieved the learning outcome(s) or provide feedback that identifies the progress they are making towards their achievement.

Formative Assessment

Formative assessment has been described as being assessment for learning.

It "refers to all those activities undertaken by teachers, and by the students in assessing themselves, which provide information to be used as feedback to modify the teaching and learning activities in which they are engaged" (Black and Williams, 1998).

Summative Assessment

Summative assessment is assessment that tries to summarise student learning at some point in time – usually at the end of a module or programme.

Summative assessment has been described as “end-of-course assessment and essentially means that this is assessment which produces a measure which sums up someone’s achievement and which has no other real use except as a description of what has been achieved” (Brown and Knight, 1994).

Thus, the use of summative assessment enables a grade to be generated that reflects the student's performance usually through the traditional examination paper.

Assessment Methods

- MCQs
- Short Answer Test
- Essay
- Performance Test
- Written Test
- Fieldwork/Practicum
- Projects

- Laboratory Test
- Thesis
- Presentation
- Portfolios
- Case Studies
- Posters
- Journals/Blogs
Rubric Assessment

Learning outcomes specify the minimum acceptable standard to enable a student to pass a module. Student performances above this basic threshold level are differentiated by applying grading criteria.

A **rubric** is a grading tool used to describe the criteria used in grading the performance of students. In general, each rubric consists of a set of **criteria, descriptors and marks or grades** associated with these criteria.

Thus, rubrics help to define the criteria of the system of assessment by describing performance at different points on a rating scale.

Rubrics: Exercise

<table>
<thead>
<tr>
<th>Source Problems (5%)</th>
<th>Poor</th>
<th>Passable</th>
<th>Excellent</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 2 3 4</td>
<td>5 6 7 8</td>
<td>9 10</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secondary Problems (10%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- clarity of definition</td>
</tr>
<tr>
<td>- comprehensiveness</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Analysis (45%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- application of concepts</td>
</tr>
<tr>
<td>- data analysis (financial, marketing)</td>
</tr>
<tr>
<td>- use of critical reasoning skills</td>
</tr>
<tr>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recommended Alternative (10%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- is justification convincing?</td>
</tr>
<tr>
<td>- use of theory to justify</td>
</tr>
<tr>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Overall Presentation Standard (10%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- structure and organisation</td>
</tr>
<tr>
<td>- writing mechanics</td>
</tr>
<tr>
<td>- proof reading</td>
</tr>
<tr>
<td>- referencing</td>
</tr>
<tr>
<td>- bibliography</td>
</tr>
<tr>
<td>5</td>
</tr>
</tbody>
</table>

Key factors of how to choose ...

What are the key factors of how to choose the Teaching methods? Please give the idea.....

- Learning outcomes   - Validity
- Characteristics of students   - Reliability
- Educational philosophy   - Flexibility
- Competences of academic staff   - Fairness
- Time
- Logistical requirements such as classroom, equipment, etc.
Subject: ........................................

CLO 1: ........................................
Action Verb + Object + Modification
CLO 2: ........................................
CLO 3 ........................................

<table>
<thead>
<tr>
<th>Content</th>
<th>CLO No.</th>
<th>Teaching method</th>
<th>Assessment method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

### 6. Academic Staff Quality

#### Requirements (10)

1. Both short-term and long-term planning of academic staff establishment or needs (including succession, promotion, re-deployment, termination, and retirement plans) are carried out to ensure that the quality and quantity of academic staff fulfill the needs for education, research and service.

2. Staff-to-student ratio and workload are measured and monitored to improve the quality of education, research and service.

---

#### Example of constructive alignment

<table>
<thead>
<tr>
<th>Learning Outcomes: On completion of this module students should be able:</th>
<th>Assessment Methods</th>
<th>Teaching/Learning Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>To identify the main signs and symptoms of multiple sclerosis.</td>
<td>Multiple Choice Questions</td>
<td>Lecture on various signs/symptoms, in class exercises/quizzes on terminology.</td>
</tr>
<tr>
<td>To formulate end products using selected ingredients</td>
<td>Poster Display 15% Presentation of end product 85%</td>
<td>Lecture presenting case studies of the design history of some market leaders. Students plan own project and present as poster. Student projects on food formulation.</td>
</tr>
<tr>
<td>To develop and identify an area for research in the discipline</td>
<td>1,000 word research proposal</td>
<td>Presentation of examples of research questions, student discussion groups on research areas.</td>
</tr>
<tr>
<td>To demonstrate effective presentational skills</td>
<td>In-class graded presentation</td>
<td>Practices sessions in the class, peer-assessment, using set criteria, of others in class.</td>
</tr>
</tbody>
</table>

---

#### 6. Academic Staff Quality

#### Requirements (10)

3. Competences of academic staff are identified and evaluated. A competent academic staff will be able to:
   - design and deliver a coherent teaching and learning curriculum;
   - apply a range of teaching and learning methods and select most appropriate assessment methods to achieve the expected learning outcomes;
   - develop and use a variety of instructional media;
   - monitor and evaluate their own teaching performance and evaluate courses they deliver;
   - reflect upon their own teaching practices; and
   - conduct research and provide services to benefit stakeholders.
6. Academic Staff Quality

### Requirements (10)

1. Recruitment and promotion of academic staff are based on merit system, which includes teaching, research and service.
2. Staff to student ratio and workload are measured and monitored to improve the quality of education, research and service.
3. Recruitment and selection criteria including ethics and academic freedom for appointment, deployment and promotion are determined and communicated.
4. Duties allocated to academic staff are appropriate to qualifications, experience, and aptitude.
5. All academic staff members are accountable to the university and its stakeholders, taking into account their academic freedom and professional ethics.
6. Training and development needs for academic staff are systematically identified, and appropriate training and development activities are implemented to fulfill the identified needs.
7. Performance management including rewards and recognition is implemented to motivate and support education, research and service.
8. The types and quantity of research activities by academic staff are established, monitored and benchmarked for improvement.

### 6. Academic Staff Quality (7)

<table>
<thead>
<tr>
<th>6 Academic Staff Quality</th>
<th>6.4 Competences of academic staff are identified and evaluated. [3]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6.5 Training and developmental needs of academic staff are identified and activities are implemented to fulfill them. [8]</td>
</tr>
<tr>
<td></td>
<td>6.6 Performance management including rewards and recognition is implemented to motivate and support education, research and service. [9]</td>
</tr>
<tr>
<td></td>
<td>6.7 The types and quantity of research activities by academic staff are established, monitored and benchmarked for improvement. [10]</td>
</tr>
</tbody>
</table>
Processes required

Capacity Planning/Competences Identification

Recruitment

Assignment/Deployment/Accountability

Training and Development

Performance Evaluation

Promotion/Redeployment

Retention and Retirement

Planning

Recruitment

Development

Performance Management

Training and Development

Performance Evaluation

Retention and Retirement

Planning

Recruitment

Development

Performance Management

Full-Time Equivalent (FTE): Use this Table to specify the number of academic staff and their FTEs in the last 5 academic years.

<table>
<thead>
<tr>
<th>Category</th>
<th>M</th>
<th>F</th>
<th>Total</th>
<th>FTEs</th>
<th>Percentage of PhDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associate/Assistant Professors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time Lecturers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part-time Lecturers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visiting Professors/Lecturers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

specify reference date and method of calculation used for FTE of Students

Full-Time Equivalent (FTE): Teaching Load

- In calculating the FTEs of academic staff, institutions should define what constitutes full-time student loads and faculty teaching loads including part-time students and faculty at their percentage of full-time loads.
- One of the methods to calculate FTEs is based on the investment of time. For example, if 1 FTE is equal to 40 hours per week (full-time employment), then the FTE of an academic staff member with a teaching load of 8 hours per week will be 0.2 (i.e. 8/40).

Full-Time Equivalent (FTE): Student load

- The investment of time method can also be used for calculating FTEs of student.
- For example, if 1 FTE student has to attend 30 hours of lesson a week, then the FTE of a student with 21 hours of lesson a week will have a FTE of 0.7 (i.e. 21/30).
**Staff-to-student Ratio**

- This indicator is the ratio of 1 FTE academic staff member employed to the number of FTE students enrolled.
- The aim is to give an idea of how much contact time and academic support students at the institution may expect to receive.
- Specify the staff-to-student ratio in the last 5 academic years.

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Total FTEs of Academic Staff</th>
<th>Total FTEs of Students</th>
<th>Staff-to-student Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Specify reference date and method of calculation used for FTE of Academic Staff.

---

**Types and number of research publications**

Provide data on the types and number of research publications in the last 5 academic years.

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>In-house/Institutional</th>
<th>National</th>
<th>Regional</th>
<th>International</th>
<th>Total</th>
<th>No. of Publications Per Academic Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

---

**7. Support Staff Quality**

**Requirements (5)**

1. Both short-term and long-term planning of support staff establishment or needs of the library, laboratory, IT facility and student services are carried out to ensure that the quality and quantity of support staff fulfill the needs for education, research and service.

2. Recruitment and selection criteria for appointment, deployment and promotion of support staff are determined and communicated. Roles of support staff are well defined and duties are allocated based on merits, qualifications and experiences.
7. Support Staff Quality

Requirements (5)

3. Competences of support staff are identified and evaluated to ensure that their competencies remain relevant and the services provided by them satisfy the stakeholders’ needs.

4. Training and development needs for support staff are systematically identified, and appropriate training and development activities are implemented to fulfill the identified needs.

5. Performance management including rewards and recognition is implemented to motivate and support education, research and service.
Number of Support Staff (specify reference date)

specify the number of support staff available in the last 5 academic years

<table>
<thead>
<tr>
<th>Support Staff</th>
<th>Highest Educational Attainment</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High School</td>
<td>Bachelor’s</td>
</tr>
<tr>
<td>Library Personnel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laboratory Personnel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT Personnel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrative Personnel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Services Personnel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(enumerate the services)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. Student Quality and Support

Requirements (5)

1. The student intake policy and admission criteria to the programme are clearly defined, communicated, published, and up-to-date.
2. The methods and criteria for the selection of students are determined and evaluated.
3. There is an adequate monitoring system for student progress, academic performance, and workload. Student progress, academic performance and workload are systematically recorded and monitored, feedback to students and corrective actions are made where necessary.

4. Academic advice, co-curricular activities, student competition, and other student support services are available to improve learning and employability.
5. In establishing a learning environment to support the achievement of quality student learning, the institution should provide a physical, social and psychological environment that is conducive for education and research as well as personal well-being.

8 Student Quality and Support (5)

8.1 The student intake policy and admission criteria are defined, communicated, published, and up-to-date. [1]
8.2 The methods and criteria for the selection of students are determined and evaluated. [2]
8.3 There is an adequate monitoring system for student progress, academic performance, and workload. [3]
8. Student Quality and Support (5)

8.4 Academic advice, co-curricular activities, student competition, and other student support services are available to improve learning and employability. [4]

8.5 The physical, social and psychological environment is conducive for education and research as well as personal well-being. [5]

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A summary of the intake of first year students

Provide data on the intake of first year students in the last 5 academic years

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Applicants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. Applied</td>
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<tr>
<td></td>
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</table>

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A summary of the total number of students enrolled in the programme

Provide data in the last 5 academic years

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1&lt;sup&gt;st&lt;/sup&gt; Year</td>
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<tr>
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</tbody>
</table>

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Student Support Services

- Academic
- Financial & Scholarship
- Recreation & Sports
- Medical Care & Wellness
- Career & Employment
- Mentoring & Counselling
- International Student Support
- Housing
- Student Services
9. Facilities and Infrastructure

Requirements (7)

1. The physical resources to deliver the curriculum, including equipment, materials and information technology are sufficient.
2. Equipment is up-to-date, readily available and effectively deployed.
3. Learning resources are selected, filtered, and synchronised with the objectives of the study programme.
4. A digital library is set up in keeping with progress in information and communication technology.
5. Information technology systems are set up to meet the needs of staff and students.
6. The institution provides a highly accessible computer and network infrastructure that enables the campus community to fully exploit information technology for teaching, research, services and administration.
7. Environmental, health and safety standards and access for people with special needs are defined and implemented.

9. Facilities and Infrastructure (5)

<table>
<thead>
<tr>
<th>9. Facilities and Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.1 The teaching and learning facilities and equipment (lecture halls, classrooms, project rooms, etc.) are adequate and updated to support education and research. [1]</td>
</tr>
<tr>
<td>9.2 The library and its resources are adequate and updated to support education and research. [3,4]</td>
</tr>
<tr>
<td>9.3 The laboratories and equipment are adequate and updated to support education and research. [1,2]</td>
</tr>
<tr>
<td>9.4 The IT facilities including e-learning infrastructure are adequate and updated to support education and research. [1,5,6]</td>
</tr>
<tr>
<td>9.5 The standards for environment, health and safety, and access for people with special needs are defined and implemented. [7]</td>
</tr>
</tbody>
</table>
10. Quality Enhancement

The effective and efficient quality assurance and enhancement activities ensure that programmes are well-designed, regularly monitored and periodically reviewed, thereby securing their continuing relevance and currency.

The quality assurance and enhancement of programmes are expected to include:
- formulation of expected learning outcomes;
- curriculum design and development process;
- teaching and learning approach and student assessment;
- support resources, facilities and services;
- research application; and
- stakeholders’ feedback mechanisms

Requirements (6)

1. The curriculum is developed with inputs and feedback from academic staff, students, alumni and stakeholders from industry, government and professional organizations.
2. The curriculum design and development process is established and it is periodically reviewed and evaluated. Enhancements are made to improve its efficiency and effectiveness.
3. The teaching and learning processes and student assessment are continuously reviewed and evaluated to ensure their relevance and alignment to the expected learning outcomes.
4. Research output is used to enhance teaching and learning.
5. Quality of support services and facilities (at the library, laboratory, IT facility and student services) is subject to evaluation and enhancement.
6. Feedback mechanisms to gather inputs and feedback from staff, students, alumni and employers are systematic and subjected to evaluation and enhancement.

10. Quality Enhancement (6)

<table>
<thead>
<tr>
<th>10</th>
<th>Quality Enhancement</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.1</td>
<td>Stakeholders needs and feedback serve as input to curriculum design and development. [1]</td>
</tr>
<tr>
<td>10.2</td>
<td>The curriculum design and development process is established and subjected to evaluation and enhancement. [2]</td>
</tr>
<tr>
<td>10.3</td>
<td>The teaching and learning processes, and student assessment are continuously reviewed and evaluated to ensure their relevance and alignment. [3]</td>
</tr>
</tbody>
</table>
10. Quality Enhancement (6)

10.4 Research output is used to enhance teaching and learning. [4]

10.5 Quality of support services and facilities (at the library, laboratory, IT facility and student services) is subjected to evaluation and enhancement. [5]

10.6 The stakeholders feedback mechanism is systematic and subjected to evaluation and enhancement. [6]

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Stakeholder’s Feedback

What are the mechanisms used to solicit feedback from stakeholders in your programme/ faculty/ university?

- Define Purpose
- Determine & Design Feedback Mechanism
- Collect Data
- Analyse Data & Report
- Recommend Improvement
- Implement Improvement

---

Stakeholder’s Feedback

- Stakeholders
- Frequency
- Sample size
- Response rate
- Quantitative and qualitative feedback
- Improvement strategy

- Define Purpose
- Determine & Design Feedback Mechanism
- Collect Data
- Recommend Improvement
- Implement Improvement
- Analyse Data & Report
Common Formal Feedback Mechanisms

- Surveys:
  - Questionnaire
  - Mail survey
  - Electronic/internet survey
  - Face-to-face interview
  - Telephone interview
- Tracer studies
- Focus group discussions
- Dialogues
- Complaint/suggestion system

11. Output (5)

11. Output

11.1 The pass rates and dropout rates are established, monitored and benchmarked for improvement. [1]

11.2 The average time to graduate is established, monitored and benchmarked for improvement. [1]

11.3 Employability of graduates is established, monitored and benchmarked for improvement. [1]

11.4 The types and quantity of research activities by students are established, monitored and benchmarked for improvement. [2]

11.5 The satisfaction levels of stakeholders are established, monitored and benchmarked for improvement. [3]
Output

- Current and past performance indicators
- Performance targets
- Trend (upwards or downwards) and its reasons
- Comparison with other competitors or universities
- Benchmark with targeted universities

Pass Rates and Dropout Rates (last 5 cohorts)

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Cohort Size</th>
<th>% completed first degree in 3 Years</th>
<th>% completed first degree in 4 Years</th>
<th>% completed first degree in &gt;4 Years</th>
<th>% dropout during 1st Year</th>
<th>% dropout during 2nd Year</th>
<th>% dropout during 3rd Year</th>
<th>% dropout during 4th Years &amp; Beyond</th>
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</table>

Stakeholders’ Satisfaction

- The satisfaction level of stakeholders should be measured and monitored.
- How do you go about measuring stakeholders’ satisfaction?

Relationship of AUN-QA Criteria and Sub-Criteria
<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1      | Absolutely Inadequate  
The QA practice to fulfill the criterion is not implemented. There are no plans, documents, evidences or results available. Immediate improvement must be made. |
| 2      | Inadequate and Improvement is Necessary  
The QA practice to fulfill the criterion is still at its planning stage or is inadequate where improvement is necessary. There is little document or evidence available. Performance of the QA practice shows little or poor results. |
| 3      | Inadequate but Minor Improvement Will Make It Adequate  
The QA practice to fulfill the criterion is defined and implemented but minor improvement is needed to fully meet them. Documents are available but no clear evidence to support that they have been fully used. Performance of the QA practice shows inconsistent or some results. |
| 4      | Adequate as Expected  
The QA practice to fulfill the criterion is adequate and evidences support that it has been fully implemented. Performance of the QA practice shows consistent results as expected. |
| 5      | Better Than Adequate  
The QA practice to fulfill the criterion is better than adequate. Evidences support that it has been efficiently implemented. Performance of the QA practice shows good results and positive improvement trend. |
| 6      | Example of Best Practices  
The QA practice to fulfill the criterion is considered to be example of best practices in the field. Evidences support that it has been effectively implemented. Performance of QA practice shows very good results and positive improvement trend. |
| 7      | Excellent (Example of World-class or Leading Practices)  
The QA practice to fulfill the criterion is considered to be excellent or example of world-class practices in the field. Evidences support that it has been innovatively implemented. Performance of the QA practice shows excellent results and outstanding improvement trends. |