

# Approach Teaching and Learning and Assessment Schemes to aligning with ELOs in Curriculum Design

Chavalit Wongse-ek  
Veeradeth Panvisavas



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## Learning Outcomes

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### Develop and Implement properly Curriculum

Revision based on OBE Framework

- **Review and correct the** ELOs, BCD and curriculum map
- **Approach** properly teaching-learning activities and assessment schemes to aligning the ELOs
- **Develop** course learning outcomes (CLOs)
- **Develop** a course syllabi

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## Workshop:

3

- W1: How to approach teaching and learning and assessment schemes to aligning the ELOs
- W2: Develop course learning outcomes (CLOs) and course syllabi

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4 Basic steps involved in a curriculum design and implementation in OBE

4



### Expected Learning Outcomes

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



### Backward Curriculum Design

Translate the ELOs into Programme Structure and Content based on the sequence and integration of knowledge and skills that align with each ELO.



### Curriculum Map, Program Structure, Study Plan

Module, Courses

T & L Approach

Assessment Schemes



Design and construct a Curriculum Map, Course specification and Syllabus based on constructive alignment with the ELOs.

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## W1: Self-Assessing the OBE implementation

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## 1. Expected Learning Outcomes (3)

| 1   | Expected Learning Outcomes   |
|-----|--|
| 1.1 | The expected learning outcomes have been clearly formulated and aligned with the vision and mission of the university. [1,2] |
| 1.2 | The expected learning outcomes cover both subject specific and generic (i.e. transferable) learning outcomes. [3]            |
| 1.3 | The expected learning outcomes clearly reflect the requirements of the stakeholders. [4]                                     |

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Please review your ELOs  
and check them with EX01

15 minutes

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### Rubric for Assessing the OBE implementation

EX01

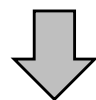
Program .....

| CRITERION  | 1-<br>NON/INITIAL | 2-<br>EMERGING | 3-<br>DEVELOPED | 4-HIGHLY<br>DEVELOPED |
|--|-------------------|----------------|-----------------|-----------------------|
| <b>1. Expected Learning Outcomes (ELOs)</b>  |                   |                |                 |                       |
| ELOs have been clearly formulated (1.1)  |                   |                |                 |                       |
| ELOs align with VMV of MU (1.1)  |                   |                |                 |                       |
| ELOs relate to programme goals/aims/objectives                                       |                   |                |                 |                       |
| ELOs relate to TQF   |                   |                |                 |                       |
| ELOs cover both specific and generic LOs (1.2)                                       |                   |                |                 |                       |
| Each ELO clearly indicate level of learning (educational taxonomy /Bloom's taxonomy) |                   |                |                 |                       |
| ELOs clearly reflect the requirements of the key stakeholders: (1.3)                 |                   |                |                 |                       |
| - Students   |                   |                |                 |                       |
| - Academic staff   |                   |                |                 |                       |
| - Alumni   |                   |                |                 |                       |
| - Employers  |                   |                |                 |                       |
| - Others (.....)   |                   |                |                 |                       |
| <b>Comments</b>  |                   |                |                 |                       |

#### Score Description:

- 3 Process has been fully implemented with evidences supported.
- 4 Process has been fully implemented with evidences supported. Consistent results or CQI can be found.
- 2 Process has implemented but minor improvement is needed. There are no clear evidences to support. Inconsistent or some results may be found.
- 1 Process is still at its planning stage or is inadequate. There is little document or evidence available. Little or poor results may be found.

From ELOs



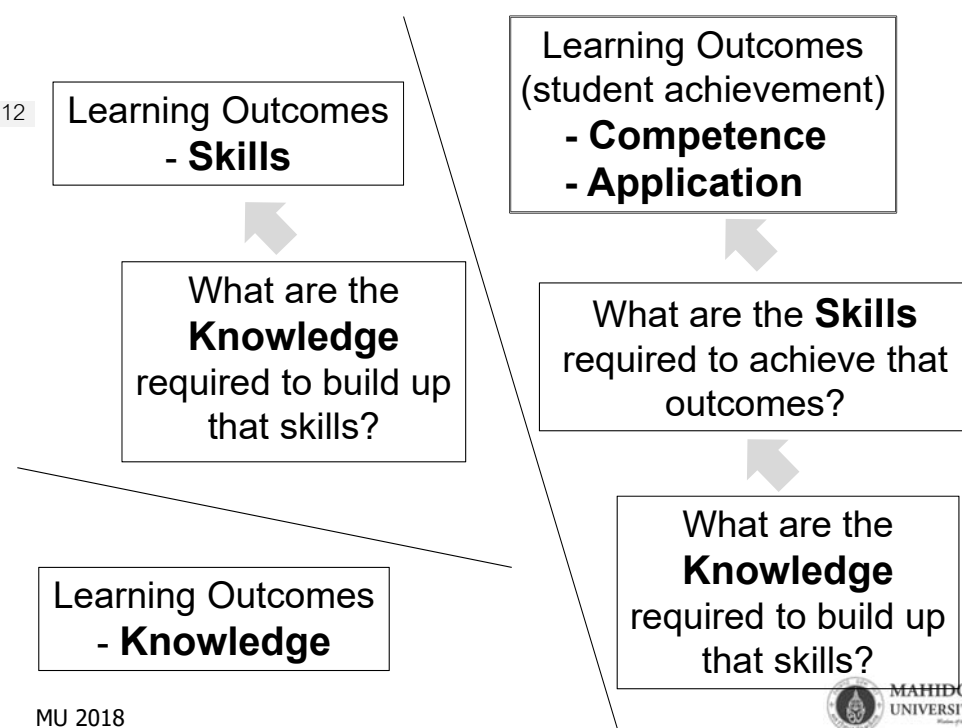
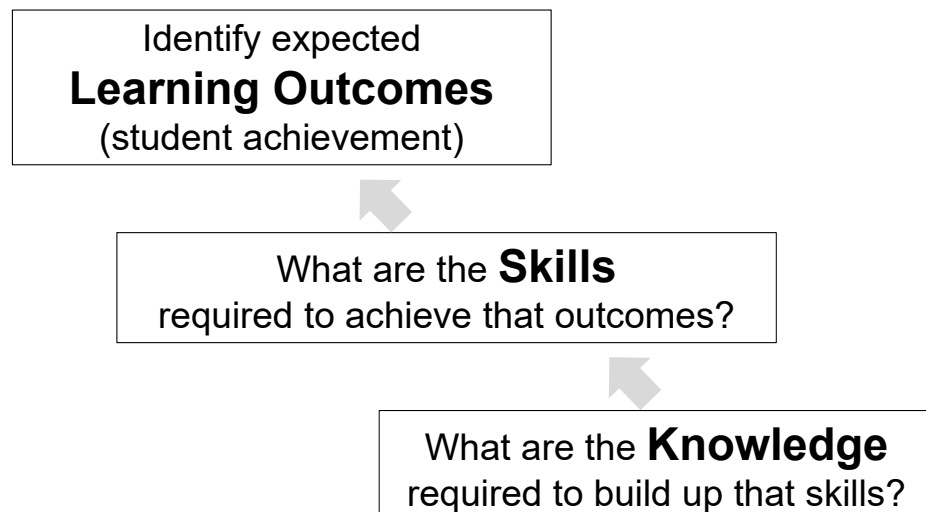
## Design the Curriculum Using Backward Curriculum Design



## AUN 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]             |

## Backward Design Process



## (2) Backward Design Curriculum, BDC

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| ELO/<br>Competency | Specific Skills | Generic Skills           | Knowledge                           |
|--------------------|-----------------|--------------------------|-------------------------------------|
| <b>ELO 1</b>       | <b>SS1</b>      | <b>GS1</b><br><b>GS2</b> | <b>K1</b><br><b>K2</b><br><b>K3</b> |
|                    | <b>SS2</b>      | <b>GS1</b>               | <b>K2</b><br><b>K4</b>              |
|                    | <b>SS3</b>      | <b>GS1</b><br><b>GS3</b> | <b>K1</b><br><b>K2</b><br><b>K5</b> |
| <b>ELO 2</b>       | <b>SS3</b>      | <b>GS3</b><br><b>GS4</b> | <b>K1</b><br><b>K2</b><br><b>K3</b> |

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**ELO 3:** Develop, adapt and implement research methodologies to extend and redefine existing knowledge and/or professional practice

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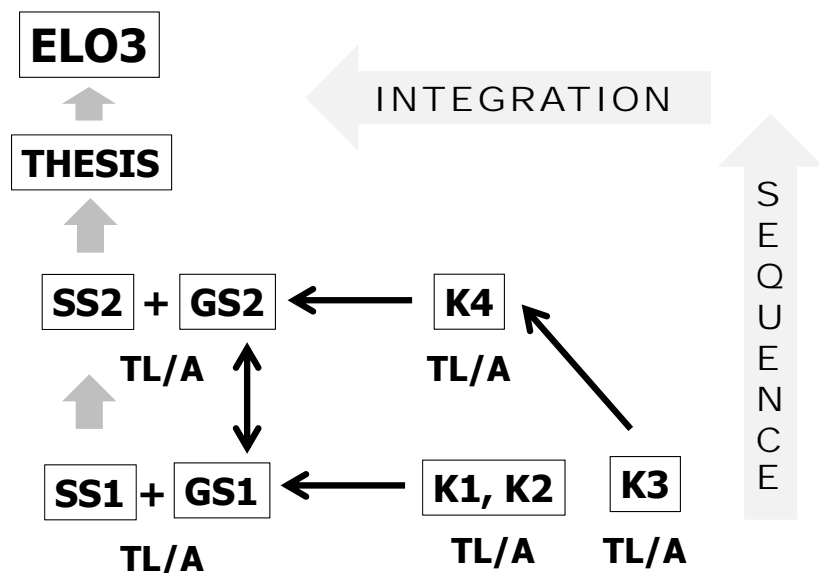
| Specific skill required                 | Generic skill required  | Knowledge required  |
|---|---|---|
| <b>SS1</b><br>Develop research question | <b>GS1</b> IT skill<br><b>GS2</b> Reading skill (English proficiency) | <b>K1</b> Research methodology<br><b>K2</b> Literature review<br><b>K3</b> Professional knowledge |
| <b>SS2</b><br>Research plan             | <b>GS3</b> Decision making  | <b>K1</b> Research methodology  |
| <b>SS3</b> .....                        |   |   |
| <b>THESIS</b>                           |   |   |

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## BCD: Approach of Teaching and Learning and Assessment Schemes

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## Transform BCD to Courses, Modules, Activities

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From **BCD** of all ELOs, you can combine KNOWLEDGES and SKILLS to COURSES

For **example: From ELO3,**

MU 510 = K1 + K2 + K3

MU 520 = SS1 + GS1

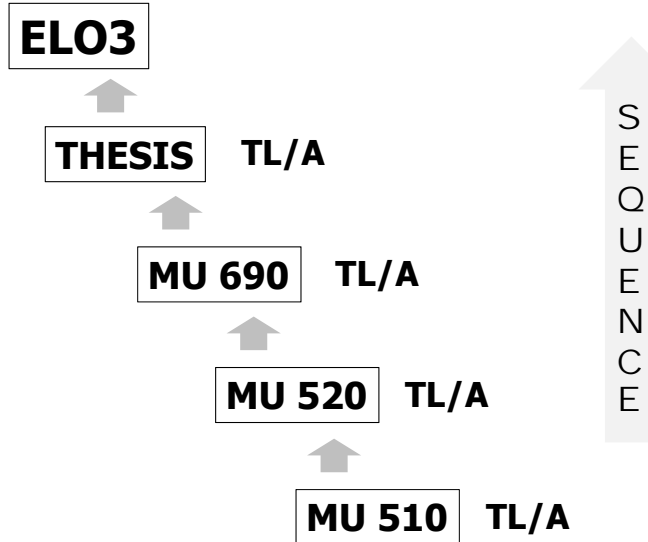
MU 690 = K4 + SS2 + GS2

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## BCD: Approach of Teaching and Learning and Assessment Schemes

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**Please review your BCD  
and check with EX01**

30 minutes

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| CRITERION  | 1-<br>NON/INITIAL | 2-<br>EMERGING | 3-<br>DEVELOPED | 4-HIGHLY<br>DEVELOPED |
|--|-------------------|----------------|-----------------|-----------------------|
| <b>2. Backward Curriculum Design (BCD)</b> (1.1), (3.3)  |                   |                |                 |                       |
| Complete properly process of transformation  |                   |                |                 |                       |
| All ELOs have been transformed   |                   |                |                 |                       |
| The curriculum is structured so that the sequence of learning can be clearly seen in terms of the relationship and progression of knowledge, skills and attitudes (basic courses, the intermediate courses, and the specialised courses) |                   |                |                 |                       |
| The curriculum is structured so that the integration in the programme contents can be clearly seen   |                   |                |                 |                       |
| The curriculum is designed so that the teaching and learning methods and student assessment support the achievement of the ELOs (T&L and assessment schemes included)  |                   |                |                 |                       |
| BCD is transformed to Course Curriculum Design   |                   |                |                 |                       |
| Comments   |                   |                |                 |                       |

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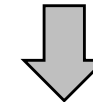


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**From ELOs and BDC**



**Construct the Program Structure and Study Plan**



**Construct the Curriculum Map**

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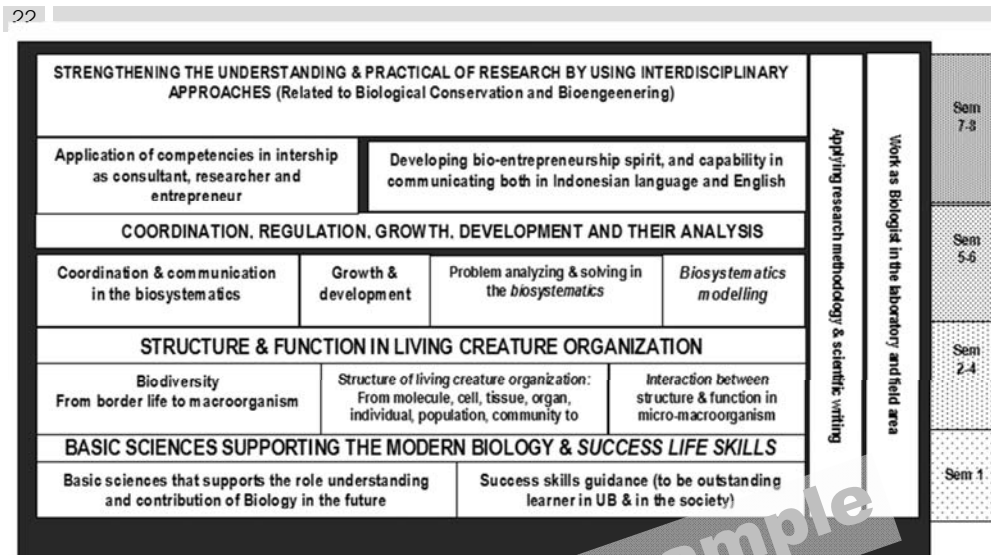


## Programme structure of DVM



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## Curriculum Structure of BSP



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| Concentration        | Public Policy  | Public Service   | Developmental  | Governmental   |
|----------------------|--|--|--|--|
| Concentration        | Religion, Pancasila, Citizenship Education, Indonesian Language, English Language, Introduction to Public Administration Science, Organizational Theory, Administration Analysis, Law of Public Administration, History of Administrative Science Thinking, Indonesian Social Cultural System, Management Principles, Ethics in Public Administration, Organizational Communication, Organizational Behavior & Development, Statistic, Public Administration Theory, Research Method, Entrepreneurship, Performance in Public Sector Organization, Bureaucracy, Strategic Management for Public Sector, Leadership, Methods of Scientific Writing, Governance Theory, Global Governance, Qualitative & Quantitative Data Analysis, Development of Capacity and Institutional of Public Sector, Public Finance Management, Comparative of Public Administration, Human Resource Management for Public Sector, Administrative Reform, Ecology of Administration, Empowerment of Local Community and Resource, Internship | Religion, Pancasila, Citizenship Education, Indonesian Language, English Language, Introduction to Public Administration Science, Organizational Theory, Administration Analysis, Law of Public Administration, History of Administrative Science Thinking, Indonesian Social Cultural System, Management Principles, Ethics in Public Administration, Organizational Communication, Organizational Behavior & Development, Statistic, Public Administration Theory, Research Method, Entrepreneurship, Performance in Public Sector Organization, Bureaucracy, Strategic Management for Public Sector, Leadership, Methods of Scientific Writing, Governance Theory, Global Governance, Qualitative & Quantitative Data Analysis, Development of Capacity and Institutional of Public Sector, Public Finance Management, Comparative of Public Administration, Human Resource Management for Public Sector, Administrative Reform, Ecology of Administration, Empowerment of Local Community and Resource, Internship | Religion, Pancasila, Citizenship Education, Indonesian Language, English Language, Introduction to Public Administration Science, Organizational Theory, Administration Analysis, Law of Public Administration, History of Administrative Science Thinking, Indonesian Social Cultural System, Management Principles, Ethics in Public Administration, Organizational Communication, Organizational Behavior & Development, Statistic, Public Administration Theory, Research Method, Entrepreneurship, Performance in Public Sector Organization, Bureaucracy, Strategic Management for Public Sector, Leadership, Methods of Scientific Writing, Governance Theory, Global Governance, Qualitative & Quantitative Data Analysis, Development of Capacity and Institutional of Public Sector, Public Finance Management, Comparative of Public Administration, Human Resource Management for Public Sector, Administrative Reform, Ecology of Administration, Empowerment of Local Community and Resource, Internship | Religion, Pancasila, Citizenship Education, Indonesian Language, English Language, Introduction to Public Administration Science, Organizational Theory, Administration Analysis, Law of Public Administration, History of Administrative Science Thinking, Indonesian Social Cultural System, Management Principles, Ethics in Public Administration, Organizational Communication, Organizational Behavior & Development, Statistic, Public Administration Theory, Research Method, Entrepreneurship, Performance in Public Sector Organization, Bureaucracy, Strategic Management for Public Sector, Leadership, Methods of Scientific Writing, Governance Theory, Global Governance, Qualitative & Quantitative Data Analysis, Development of Capacity and Institutional of Public Sector, Public Finance Management, Comparative of Public Administration, Human Resource Management for Public Sector, Administrative Reform, Ecology of Administration, Empowerment of Local Community and Resource, Internship |
| Course Support       | Public Policy I, Public Policy II, Indonesian Political System, Decision Making, Fiscal & Financial Policy   | Public Service Management, Public Management Theory, Information System Management of Public Sector  | Theory of Development, Administration of Development, Planning, Political Economy of Development, Urban Developmental Policy   | Indonesian Public Administration System, Local Governmental System   |
| Concentration course | Seminar of Public Policy Issues  | Seminar of Public Service Issues   | Seminar of Developmental Issues  | Seminar of Governmental Issues   |
| Final Project        | Thesis   | Thesis   | Thesis   | Thesis   |

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## Programme Structure

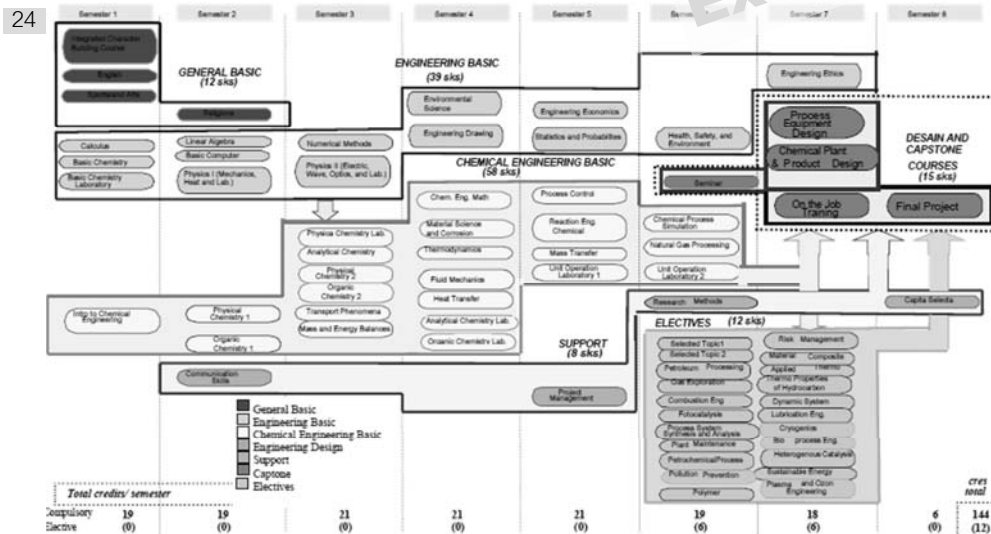
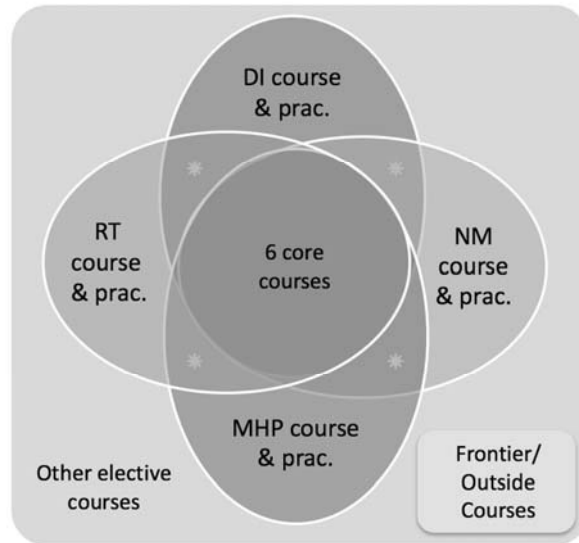


Figure 2.2 Curriculum Structure of ChESP

Source: Chemical Engineering, Universitas Indonesia

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 QA at Programme Level

## Medical Physics Program Curriculum



\* 1 minor track courses for PhD (optional for MS)

## PhD -Economic Program

|                   |
|-------------------|
| Core Courses      |
| Qualifying Exams  |
| Field Courses     |
| Research Seminar  |
| Electives         |
| Proposal Defense  |
| Thesis Defense    |
| Thesis Submission |

Example

## Curriculum Mapping: The Process

- Focused on **curriculum and program learning outcomes**
- Two-dimensional matrix representing **courses** on one axis and **outcomes** on the other
- Reflect **Backwards Curriculum Design**
- Identify **which courses address which learning outcomes**
- Indicate **Sequence and integration** of learning (all courses within the curriculum and ELOs)

## Curriculum Mapping of Courses and PLOs

|  | CODE | NAME OF COURSE | CREDITS | LO1 | LO2 | LO3 | LO4 | LO5 | LO6 | LO7 | LO8 | LO9 |
|--|------|----------------|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Specialized skills (specialized courses) |      |                |         |     |     |     |     |     |     |     |     |     |
| 1  |      | Subject 1      | 3       | X   |     |     | X   |     |     |     |     |     |
| 2  |      | Subject 2      | 3       | X   |     |     | X   |     | X   |     |     |     |
| 3  |      | Subject 3      | 3       | X   |     | X   | X   |     |     | X   |     |     |
| 4  |      | Subject 4      | 3       | X   |     |     | X   | X   |     |     | X   | X   |
| 5  |      | Subject 5      | 3       | X   |     |     | X   | X   |     |     | X   |     |
| 6  |      | Subject 6      | 3       | X   |     |     | X   | X   | X   |     | X   |     |
| 7  |      | Subject 7      | 3       | X   |     |     |     |     |     |     | X   |     |
| 8  |      | Subject 8      | 3       | X   |     |     | X   | X   | X   |     | X   | X   |

Not recommended

## Curriculum map with educational taxonomy

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|                             | COURSE    | CR | LO1 | LO2 | LO3 | LO4 | LO5 |
|-----------------------------|-----------|----|-----|-----|-----|-----|-----|
| <b>Basic courses</b>        |           |    |     |     |     |     |     |
| 1                           | Subject 1 | 3  | R   |     |     | A   |     |
| 2                           | Subject 2 | 3  | R   |     | A   |     |     |
| <b>Intermediate courses</b> |           |    |     |     |     |     |     |
| 3                           | Subject 3 | 3  | R   | A   |     | A   |     |
| 4                           | Subject 4 | 3  | R   |     |     | A   |     |
| <b>Specialized courses</b>  |           |    |     |     |     |     |     |
| 5                           | Subject 5 | 3  |     | A   | A   | E   | E   |
| 6                           | Thesis    | 18 |     | A   | A   | E   | E   |

**Bloom's Taxonomy** R = Remembering / Understanding  
A = Applying / Analyzing  
E = Evaluating / Creating

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## Ph.D. – Economic Programme

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| PhD Program Requirements | ELO1 | ELO2 | ELO3 | ELO4 | ELO5 | ELO6 | ELO7 |
|--------------------------|------|------|------|------|------|------|------|
| <b>Core Courses</b>      | I, R | I    | I    | I    | I    |      |      |
| <b>Qualifying Exams</b>  | R    | R    |      |      |      |      | I, A |
| <b>Field Courses</b>     | R    | R    | I, R | I, R | I, R | I, R |      |
| <b>Research Seminar</b>  | R    | R    | R    | I, R | R    | R    | R, A |
| <b>Electives</b>         | R    | R    | R    | R    | R    | R    |      |
| <b>Proposal Defense</b>  | R, A | R, A | R, A | R, A | R    | R    | R    |
| <b>Thesis Defense</b>    | M, A | M, A | M, A | M, A | M    | M    | R    |
| <b>Thesis Submission</b> | M    | M    | M    | M    | M    | M    | A    |

I = Introduced; R = Reinforced & opportunity to practice; M = Mastery at the senior or exit level;  
A = Assessment evidence collected

1. Demonstrate an understanding of economic theory and analytical and quantitative tools.
2. Demonstrate an ability to understand, integrate, and apply the various tools, concepts, and principles of economics and quantitative methods to analyze and to develop solutions to economic problems in a clear and concise written form.
3. Demonstrate a "frontier" level competency and familiarity with the literature in the student's perceived specialty area.
4. Demonstrate the ability to conduct independent and original research in economics.
5. Have the skills necessary to qualify for teaching positions at the university and college levels, and for research positions in the public or private sector.
6. Program graduates will be able to obtain employment that uses the level of expertise obtained in the Ph.D. program.
7. Complete these goals according to the timeline described in the graduate program guidelines.

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## Please review your Curriculum Map and Programme Structure

Check with EX01

30 minutes

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| CRITERION   | 1-<br>NON/INITIAL | 2-<br>EMERGING | 3-<br>DEVELOPED | 4-HIGHLY<br>DEVELOPED |
|---|-------------------|----------------|-----------------|-----------------------|
| <b>3. Programme Structure and Contents</b>  |                   |                |                 |                       |
| Programme structure is designed in relation to BCD  |                   |                |                 |                       |
| Programme structure is shown as the diagram/ workflow and/or study plan   |                   |                |                 |                       |
| Sequence of learning can be seen in the programme structure   |                   |                |                 |                       |
| Comments  |                   |                |                 |                       |
| <b>4. Curriculum Map (CM) (3.1, 3.2)</b>  |                   |                |                 |                       |
| The curriculum is designed to meet the ELOs where the contribution made by each course in achieving the programme's ELOs is clear (3.1)         |                   |                |                 |                       |
| The curriculum is designed so that the subject matter is logically structured, sequenced, and integrated (3.2)                                  |                   |                |                 |                       |
| The curriculum structure shows clearly the relationship and progression of basic courses, the intermediate courses, and the specialised courses |                   |                |                 |                       |
| The curriculum is structured so that it is flexible enough to allow students to pursue an area of specialisation                                |                   |                |                 |                       |
| The curriculum is structured so that it is incorporate more recent changes and developments in the field.                                       |                   |                |                 |                       |
| Comments  |                   |                |                 |                       |

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## W2: How to approach teaching and learning and assessment schemes to aligning the ELOs

**ELO → Programme structure and Contents  
→ Teaching and Learning Approach  
→ Assessment Schemes**

## AUN 4: Teaching and Learning Approach (3)

| 4   | Teaching and Learning Approach   |
|-----|--|
| 4.1 | The educational philosophy is well articulated and communicated to all stakeholders. [1]                       |
| 4.2 | Teaching and learning activities are constructively aligned to achievement of the learning outcomes. [2,3,4,5] |
| 4.3 | Teaching and learning activities enhance life-long learning. [6]   |

## 4. Teaching and Learning Approach

### Requirements (6)

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.

## 4. Teaching and Learning Approach

### Requirements (6)

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

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### 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.).

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### Programme Goals

**Educational philosophy**  
can be defined as a set of related beliefs  
that influences what and how  
students should be taught  
**(T/L approach)**

### Programme Assessments

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## Educational Philosophy (NUS)

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### NUS Educational Philosophy

The NUS community of students, teachers, and administrators, seeks to help students become individuals with **questioning** minds, willing and able to examine what is taken for granted, and who engage in rigorous inquiry within and beyond assumed disciplinary borders; individuals of **well-rounded** mind and character; **constructive and responsible** members of a community, ready to assume leadership and conscious of the impact of their activities on others; **global citizens**, who are sensitive to diverse cultural settings, aware of the potential they offer, and capable of operating in them, while conscious of the particularity, value, and limits of their own perspectives; bearers of a **resourceful and enterprising** spirit, in public and private life; and able **communicators** who can articulate and defend ideas effectively. The University seeks to inculcate students with the above qualities through both formal and informal education that extends from the classroom environment to a larger institutional culture outside the classroom. The latter includes the myriad learning opportunities in residential living.

NUS recognizes its distinctive educational role as a university with both an **Asian and international identity**. This unique position creates the possibility of equally unique perspectives, and allows the University to retain a global outlook while drawing from and reflecting upon the character and resources of the region.

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Source: <http://www.nus.edu.sg/registrar/edu.html>



## Educational Philosophy (DLSU)

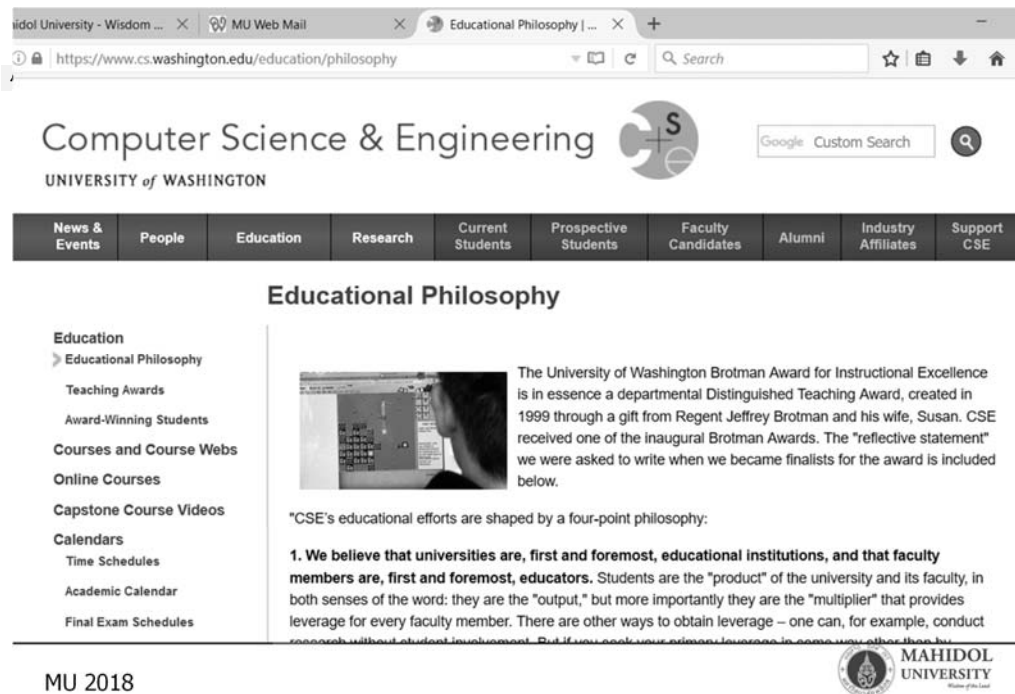
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Source: <http://www.dlsu.edu.ph/offices/osa/cao/>





Computer Science & Engineering  
UNIVERSITY of WASHINGTON

News & Events | People | Education | Research | Current Students | Prospective Students | Faculty Candidates | Alumni | Industry Affiliates | Support CSE

### Educational Philosophy

Education  
» Educational Philosophy  
Teaching Awards  
Award-Winning Students  
Courses and Course Webs  
Online Courses  
Capstone Course Videos  
Calendars  
Time Schedules  
Academic Calendar  
Final Exam Schedules

The University of Washington Brotman Award for Instructional Excellence is in essence a departmental Distinguished Teaching Award, created in 1999 through a gift from Regent Jeffrey Brotman and his wife, Susan. CSE received one of the inaugural Brotman Awards. The "reflective statement" we were asked to write when we became finalists for the award is included below.

"CSE's educational efforts are shaped by a four-point philosophy:

1. We believe that universities are, first and foremost, educational institutions, and that faculty members are, first and foremost, educators. Students are the "product" of the university and its faculty, in both senses of the word: they are the "output," but more importantly they are the "multiplier" that provides leverage for every faculty member. There are other ways to obtain leverage – one can, for example, conduct research without student involvement. But if you seek your primary leverage in some way other than by...

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## Student-Centered Approach to Learning

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- In this model, **teachers and students play an equally active role** in the learning process.
- The teacher's primary **role is to coach and facilitate student learning** and overall comprehension of material.
- Student **learning is measured through both formal and informal forms of assessment**, including group projects, student portfolios, and class participation.
- **Teaching and assessment are connected**; student learning is continuously measured during teacher instruction.

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## Constructive Alignment

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- **Programme level**
- **Course level**

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).



## Constructive Alignment at Programme Level

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The **curriculum should be designed** so that the teaching activities, **learning activities** and **assessment tasks** are **co-ordinated with the Expected learning outcomes**.



## Alignment of ELO and TLA

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| Typical ELO    | Possible TLAs                     |
|----------------|-----------------------------------|
| Describe       | Set reading, lecture, report on   |
| Explain        | Tutorial, activities, write essay |
| Integrate      | Project, assignment               |
| Apply          | Project, case study               |
| Solve problem  | PBL, case study                   |
| Design, create | Project, poster                   |
| Hypothesise    | Experiment, project               |
| Reflect        | Reflective diary                  |

- The point is not how you are going to teach but how and **what you want your students to learn.**
- NOTE! Many of these **TLAs can be assessments tasks** as well. Then you have excellent alignment.

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## Alignment of ELO and Assessment Tasks

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| Common ELOs    | Possible Assessment                          |
|----------------|--|
| Describe       | Assignment, essay question exam              |
| Explain        | Assignment, essay question exam,             |
| Integrate      | Project, assignment                          |
| Analyse        | Case study, assignment                       |
| Apply          | Project, case study, experiment              |
| Solve problem  | Case study, project, experiment              |
| Design, create | Project, experiment, poster                  |
| Reflect        | Reflective diary, portfolio, self-assessment |
| Communicate    | A range of oral, writing or listening        |

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## Teaching and Learning Approach

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| Strategies            | Methods  | Strengths   | Weaknesses   |
|-----------------------|--|---|--|
| Direct Instruction    | <ul style="list-style-type: none"> <li>Explicit Teaching</li> <li>Lecture</li> <li>Didactic Questions</li> <li>Demonstrations</li> <li>Drill &amp; Practice</li> </ul>           | Tends to benefit auditory learners  | Shorter attention span of passive listeners                        |
| Indirect Instruction  | <ul style="list-style-type: none"> <li>Problem Solving</li> <li>Case Studies</li> <li>Concept Formulation</li> </ul>   | Promotes meaningful understanding and ownership of learning                             | Time consuming   |
| Experiential Learning | <ul style="list-style-type: none"> <li>Simulations</li> <li>Focused Imaging</li> <li>Role Play</li> <li>Models</li> <li>Games</li> <li>Field Trip</li> <li>Experiment</li> </ul> | Engaging, facilitates transfer of knowledge and skills, first hand impactful experience | Risks being artificial or superficial in terms of learning quality |

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QA at Programme Level



## Teaching and Learning Approach

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| Strategies              | Methods   | Strengths   | Weaknesses  |
|-------------------------|---|---|---|
| Interactive Instruction | <ul style="list-style-type: none"> <li>Debates</li> <li>Discussions</li> <li>Problem Solving</li> <li>Brainstorming</li> <li>Peer Learning</li> <li>Reflection</li> </ul> | Motivating for students. Interact with others broadens the educational experience                               | Dependent upon the expertise of the teacher in structuring and developing the dynamics of the group                       |
| Independent Study       | <ul style="list-style-type: none"> <li>Work Assignment</li> <li>Research Projects</li> <li>Computer-Aided Instruction</li> <li>Reflection</li> </ul>                      | Learn on demand. User is able to stop for breaks. Tutorials can be developed by experts outside the institution | Not possible to ask questions in the absence of the instructor. Individuals must be motivated enough to complete tutorial |

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QA at Programme Level



## 5. Student Assessment

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| 5   | Student Assessment   |
|-----|--|
| 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]                    |

MLV20085



## 5. Student Assessment

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|     |   |
|-----|---|
| 5.4 | Feedback of student assessment is timely and helps to improve learning. [3] |
| 5.5 | Students have ready access to appeal procedure. [8]                         |

MLV20085



## Alignment at programme level

51

|      | PLOs | Teaching Approach | Assessment Scheme |
|------|------|-------------------|-------------------|
| PLO1 |      |                   |                   |
| PLO2 |      |                   |                   |
| PLO3 |      |                   |                   |
| PLO4 |      |                   |                   |
| PLO5 |      |                   |                   |
| PLO6 |      |                   |                   |

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## Alignment at course level

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**Subject:** .....

**CLO 1:** Action Verb + Object + Modification (PLO .....)  
**CLO 2:** ..... (PLO .....)  
**CLO 3:** ..... (PLO .....)

|   | Content | CLO No. | Teaching method | Assessment method |
|---|---------|---------|-----------------|-------------------|
| 1 |         |         |                 |                   |
| 2 |         |         |                 |                   |
| 3 |         |         |                 |                   |
| 4 |         |         |                 |                   |

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## How to Approach Teaching and Learning and Assessment Schemes to aligning with ELOs in Your Curriculum Design



## Approach 1: Design Performance Criteria

1. From each ELO discuss and write down the tasks or activities that you think you students should perform to indicate the understanding or having skill stated in the ELO.
2. How can these tasks/activities be teach?
3. How will these activities/tasks be evaluated?

## Student Outcomes and Corresponding Performance Criteria

### ELO 4: an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

- Criterion 4.1 Uses computer simulation and modeling
- Criterion 4.2 Maintains current abilities in professional software use
- Criterion 4.3 Seeks and uses resources for problem solving

## Student Outcomes and Corresponding Performance Criteria

### ELO 5: an ability to function on multidisciplinary teams

- Criterion 5.1 Displays knowledge of other disciplines
- Criterion 5.2 Shows ability to collaborate and applies conflict management skills
- Criterion 5.3 Applies decision making

**ELO 4:** Use the techniques, skills, and modern engineering tools necessary for engineering practice.

| Performance Criteria   | Student Learning                               | Teaching Activities                         | Assessment Methods                   |
|--|--|---|--------------------------------------|
| 4.1 Uses computer simulation and modeling                    | Experience in using computer simulation        | Set of reading, Labs, assignment and report | Weekly homework, quizzes and rubric. |
| 4.2 Maintains current abilities in professional software use | Using current professional software            | Set of reading, Labs, assignment and report | Weekly homework, quizzes and rubric. |
| 4.3 Seeks and uses resources for problem solving             | Problem solving skill under resources provided | Assignment and report                       | Rubric                               |

## Exercise: Design Performance Criteria

1. From each ELO discuss and write down **three tasks or activities** that you think you students should perform to indicate the understanding or having skill stated in the ELO.
2. How can these tasks/activities be teach?
3. How will these activities/tasks be evaluated?

**30 minutes**

## Specific Expected Learning Outcomes (ELOs)

**ELO 1:** .....

**Performance criteria 1:** .....

**Performance criteria 2:** .....

**Performance criteria 3:** .....

**ELO 2:** .....

**Performance criteria 1:** .....

**Performance criteria 2:** .....

**Performance criteria 3:** .....

**ELO 3:** .....

**Performance criteria 1:** .....

**Performance criteria 2:** .....

**Performance criteria 3:** .....

## Approach 2: Using BCD

1. Look at the BCD of each ELO, discuss and write down teaching and learning activities for each skill and knowledge that you think you students should learn to understand or having skill.
2. How will these activities/tasks be evaluated?

**ELO 3:** Develop, adapt and implement research methodologies to extend and redefine existing knowledge and/or professional practice

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| Specific skill required                 | Generic skill required  | Knowledge required  |
|---|---|---|
| <b>SS1</b><br>Develop research question | <b>GS1</b> IT skill<br><b>GS2</b> Reading skill (English proficiency) | <b>K1</b> Research methodology<br><b>K2</b> Literature review<br><b>K3</b> Professional knowledge |
| <b>SS2</b><br>Research plan             | <b>GS3</b> Decision making  | <b>K1</b> Research methodology  |
| <b>SS3</b> .....                        |   |   |
| <b>THESIS</b>                           |   |   |

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**ELO 3:** Develop, adapt and implement research methodologies to extend and redefine existing knowledge and/or professional practice

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| Specific skill required                 | Generic skill required  | TL | A | Knowledge required  | TL | A |
|---|---|----|---|---|----|---|
| <b>SS1</b><br>Develop research question | <b>GS1</b> IT skill<br><b>GS2</b> Reading skill (English proficiency) |    |   | <b>K1</b> Research methodology<br><b>K2</b> Literature review<br><b>K3</b> Professional knowledge |    |   |
| <b>SS2</b><br>Research plan             | <b>GS3</b> Decision making  |    |   | <b>K1</b> Research methodology  |    |   |
| <b>SS3</b> .....                        |   |    |   |   |    |   |
| <b>THESIS</b>                           |   |    |   |   |    |   |

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4 Basic steps involved in a curriculum design and implementation in OBE

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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.



### Backward Curriculum Design

Translate the ELOs into Programme Structure and Content based on the sequence and integration of knowledge and skills that align with each ELO.



### Curriculum Map, Program Structure, Study Plan

Module, Courses   T & L Approach   Assessment Schemes



Design and construct a Curriculum Map, Course specification and Syllabus based on constructive alignment with the ELOs.

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**W3:**  
**Develop course learning outcomes (CLOs)**  
**and course syllabi**

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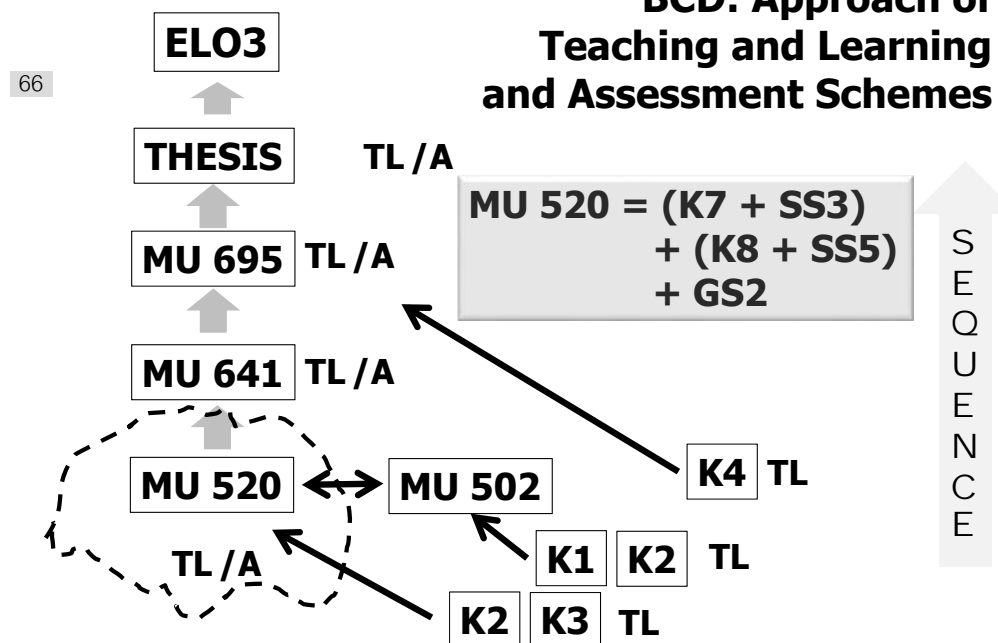
## Curriculum Map: Course matrix

|    |                    |        |        |        |       |      |
|----|--------------------|--------|--------|--------|-------|------|
| 65 | COURSES            | ELO1   | ELO2   | ELO3   | ELO4  | ELO5 |
|    | Core Courses       |        |        |        |       |      |
|    | MU 501             | K5/SS1 |        |        | GS1   |      |
|    | MU 502             |        | K6/SS2 | K6/SS4 |       | GS2  |
| ➔  | MU 520             | K7/SS3 |        | K8/SS5 |       | GS2  |
|    | Specialize Courses |        |        |        |       |      |
|    | MU 621             | SS6    |        |        | GS1   |      |
|    | MU 641             |        | SS7    | SS8    |       | GS2  |
|    | MU 695             | SS9    | SS10   | SS11/A | GS3   | GS4  |
|    | THESIS             | SS1-11 |        |        | GS1-4 |      |

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## BCD: Approach of Teaching and Learning and Assessment Schemes



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$$MU\ 520 = (K7 + SS3) + (K8 + SS5) + GS2$$

67

CLOs should be developed from CM and BCD

| K/S       | Course Learning Outcome (CLO)       | ELO |
|-----------|-------------------------------------|-----|
| K7        | Action verb + Object + modification | 1   |
| K8        | Action verb + Object + modification | 3   |
| SS3 + GS2 | Action verb + Object + modification | 1,5 |
| SS5 + GS2 | Action verb + Object + modification | 3,5 |

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## Exercise: Design Performance Criteria for each CLO

68

1. From each CLO discuss and write down the tasks or activities that you think you students should perform to indicate the understanding or having skill stated in the CLO.
2. How can these tasks/activities be teach?
3. How will these activities/tasks be evaluated?

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## Specific Course Learning Outcomes (CLOs)

- 69
- CLO 1:** .....
- Performance criteria 1: .....
- Performance criteria 2: .....
- Performance criteria 3: .....
- CLO 2:** .....
- Performance criteria 1: .....
- Performance criteria 2: .....
- Performance criteria 3: .....
- CLO 3:** .....
- Performance criteria 1: .....
- Performance criteria 2: .....
- Performance criteria 3: .....

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**CLO 1:** .....

.....

| Performance Criteria | Student Learning | Teaching Activities | Assessment Methods |
|----------------------|------------------|---------------------|--------------------|
|                      |                  |                     |                    |
|                      |                  |                     |                    |
|                      |                  |                     |                    |

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Course .....

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| <b>Course Outcome 1:</b>                    |                                 | Develop the understanding on the state of stresses and strains in engineering components as a result of different loading conditions. |                              |     |
|---|---------------------------------|---|------------------------------|-----|
| Performance Criteria                        | Student Learning Outcome        | Learning Activities   | Assessment Methods           | ELO |
| Understand state of stress and member force | Understand basic principles.    | Lecture and discussion in class   | Weekly homework and quizzes. | 1   |
| Understand various material behavior        | Knowledge of design principles. | Lecture and discussion in class   | Weekly homework and quizzes. | 1   |

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## Exercise: Develop a course syllabi

- 72
- Procedures:**
- Using the curriculum map and BCD to develop a course syllabi.
  - Select a specific course (subject)
  - Develop course syllabus included course learning outcomes (CLOs), teaching and learning approach and assessment schemes of each course

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# Question Please

*... to be continue.*



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## Assessment *for* Student Learning: Developing a Scoring Rubrics

Chavalit Wongse-ek  
Veeradeth Panvisavas



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### Day 2

---

- 0930 Assessment for Student Learning
  - 1045 Workshop:  
Assessment of Expected Learning Outcomes
  - 1300 Workshop:  
Using Rubrics as a tool to assess Learning Outcome
- 
- 

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### Learning Outcomes

---

- **Describe** cycle of assessment for student learning
- **Perform** assessing expected learning outcomes
- **Design and using** rubrics to assess expected learning outcomes
- **Perform** scoring rubrics for your programme

## 4 Basic steps involved in a curriculum design and implementation in OBE

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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.



### Backward Curriculum Design

Translate the ELOs into Programme Structure and Content based on the sequence and integration of knowledge and skills that align with each ELO.



### Curriculum Map, Program Structure, Study Plan

Module, Courses

T & L Approach

Assessment Schemes



Design and construct a Curriculum Map, Course specification and Syllabus based on constructive alignment with the ELOs.

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Rubric for Assessing the Quality of Program-level Expected Learning Outcomes

| CRITERION                                       | 1-INITIAL  | 2-EMERGING   | 3-DEVELOPED   | 4-HIGHLY DEVELOPED  |
|---|--|--|---|---|
| COMPREHENSIVE LIST OF STUDENT LEARNING OUTCOMES | The list of outcomes is problematic: e.g., very incomplete, overly detailed, inappropriate, disorganized. It may include only discipline-specific learning, ignoring relevant institution-wide learning. | The list includes reasonable outcomes but does not specify expectations for the program as a whole. Relevant institution-wide learning outcomes and/or national disciplinary standards are included. | The list is a well-organized set of reasonably outcomes that focus on the key knowledge, skills, and values students learn in the program. It includes relevant institution-wide outcomes (e.g., communication, critical thinking, etc.). | The list is reasonable, appropriate, and comprehensive, with clear distinctions between undergraduate and graduate expectations, if applicable. Relevant institution-wide learning outcomes are included. National disciplinary standards are included.   |
| CONSTRUCTIVE ALIGNMENT                          | Outcomes do not specify how understanding can be demonstrated and assessed. There is no clear relationship between the outcomes and the assessment.  | Students appear to be given reasonable opportunities to demonstrate the outcomes.  | The curriculum is designed to provide constructive alignment between the outcomes and the assessment.   | Examples of student performance at varying levels for each outcome. Pedagogy, grading, the curriculum, and assessment are explicitly and constructively aligned.  |
| ASSESSMENT PLANNING                             |  |  | explicitly include analysis and implementation of improvements.   | how improvements based on findings will be implemented. The plan is routinely examined and revised, as needed.  |
| STUDENT EXPERIENCE                              | Students know little to nothing about the overall outcomes of the program. Communication of outcomes to students, e.g., in syllabi or catalog, is spotty or nonexistent.                                 | Students have some knowledge of program outcomes. Communication is occasional and informal, left to individual faculty or advisors.  | Students have a good grasp of program outcomes. They may use them to guide their own learning. Outcomes are included in most syllabi and are readily available in the catalog, on the program web page, and elsewhere.                    | Students are well acquainted with program outcomes and may participate in creation and use of rubrics. They are skilled at self-assessing in relation to the outcomes and levels of performance. Program policy calls for inclusion of outcomes in all course syllabi, and they are readily available in other program documents. |

Adapted from the draft Rubric for Assessing the Quality of Academic Program Learning Outcomes by WASC, 2007

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## What is Assessment?

79

- The word '**assess**' comes from the Latin verb '**assidere**' meaning '**to sit with**'.
  - In assessment one is supposed to **sit with the learner**.
  - This implies it is something **we do 'with' and 'for'** students and **not 'to'** students
- Assessment is the **art and science** of knowing what students know and can do
  - It provides "evidence" of students' knowledge, skills, and abilities
  - "Evidence" supports instructors' inferences of what students know and can do (it guides and informs instruction)

(Green, 1999)

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Assessment in education is the process of *gathering, interpreting, recording, and using* information about students' responses to an educational task.

(Harlen, Gipps, Broadfoot, Nuttal, 1992)

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### 3 Key principles of quality assessment

81

#### Valid assessment

- Valid assessment design engages students in tasks aligned with the unit's intended learning outcomes and measures students' achievement of those learning outcomes (Morgan et al., 2004).
- Therefore, for an assessment to be considered valid it requires explicit alignment between intended learning outcomes of the unit, teaching and learning activities, and the assessment methods and tasks used to measure student achievement of those outcomes.

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#### Reliable assessment

82

- The term reliability refers to a demonstrated *consistency of marking overtime*, between multiple markers, and across a cohort of students. When marking is one consistently (reliably) by multiple assessors, this is referred to as inter-marker reliability. When an individual assessor marks consistently from the start of a marking process to its conclusion, this is referred to as intra-marker reliability.
- *A criteria and standards-based approach to assessment provides a foundation for reliable assessment* because it articulates the teacher's expectations of what students will achieve in the assessment task. Marking from transparent criteria and standards also enables multiple assessors to provide more consistent feedback to students on their effort.

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#### Fair assessment

83

- A fair assessment task is one in which students are given equitable opportunities to demonstrate their learning (Lam, 1995). Fair assessment processes require that students are not inadvertently placed in a better or worse position to demonstrate their achievement. Fair assessment is achievable within the timeframe allocated, and with the resources available. The provision of criteria and standards makes the assessment process more transparent for students.

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- It is also important that assessment processes and practices are fair and reasonable for staff. It can initially be time consuming for teachers to develop criteria and standards-based assessment as it requires them to articulate knowledge that is often implicit. However, this effort is well spent if it reduces time to mark student work and promotes consistency in marking. Well crafted marking schemes can minimize student questions about their result as the evaluative process is more transparent and more informative. Standards-based assessment may also reduce the time spent moderating results as standards are agreed prior to the marking process.

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## A good assessment practice:

85

- is designed to promote student learning;
- measures student achievement against learning outcomes to produce grades that are valid, reliable and maintain academic standards; and
- is fair, transparent and equitable.

(Harlen, 2005)

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## Assessment at Programme Level

86

Assessment at programme level is a goal-oriented process designed to:

- Measure and evaluate student performance of learning  
→ **Assessment for Student Learning, AfSL**
- Measure and evaluate program performance toward the aim, standards and benchmarking  
→ **Programme Assessment**

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## Program Assessment

87

- An on-going process designed to:
  - Compare educational performance with educational purposes and expectations
  - Push the institution toward clarity about where to aim and what standards/benchmarks to apply
  - Prompt attention to where and how program goals will be taught and learned.
  - Create and implement an improvement plan to "close the loop"
- It is NOT evaluation of individual faculty members, students, or courses

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## Assessment for Student Learning, AfSL

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- Assessment for Student Learning is an ongoing process of evaluating **student academic growth and personal development**.
- Assessment for Student Learning **measure and evaluate the progress of student performance** and the **student to achieve the learning outcomes**
- Institution employs data-driven decision-making to continuously improve student achievement and institutional effectiveness.

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### 3 main purposes of AfSL

89

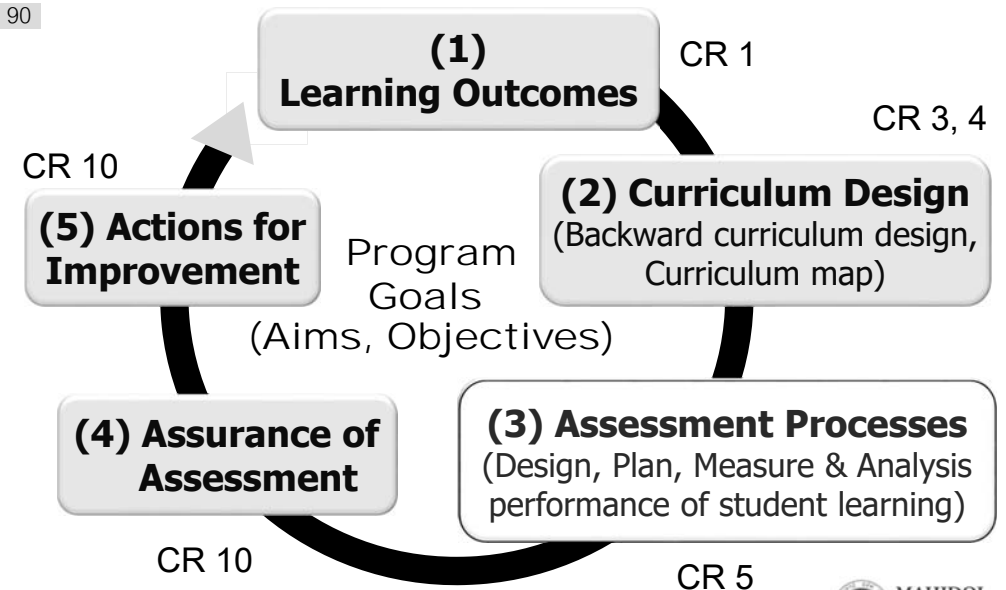
- Assessment for learning occurs when **teachers** use **inferences about student progress** to inform their teaching. (*formative*)
- Assessment for learning occurs when **teachers** use evidence of student learning to make **judgements on student achievement** against goals, standards and criteria. (*summative*)
- Assessment as learning occurs when **students reflect on and monitor their progress to inform their future learning goals**. (*formative*)

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### Five Steps of AfSL Cycle

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### Five Steps of AfSL Cycle

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1. Establish expected learning outcomes.
2. Determine "Backward Curriculum Design"
3. **Undertake an assessment process: establish goals and criteria; collect and evaluate work and behavior (direct or indirect performance of student learning); evaluate, analyze, and interpret performance.**
4. Evaluation the assessment process implemented to ensure the validity and fairness
5. Implement corrective action plan to improve the student learning to achieve the learning outcomes.

*Steps 1-2 are typically done once and then revisited as needed.*

*Steps 4 and 5 are repeated each time an assessment activity/process takes place.*

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### Formative and Summative Assessment

92

- Formative and summative assessment are **interconnected**. They seldom stand alone in construction or effect.
- The vast majority of genuine *formative assessment is informal*, with interactive and timely feedback and response.
- It is widely and empirically argued that **formative assessment** has the **greatest impact** on learning and achievement.

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## Formative Assessment

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- Assessment **for** learning
- Taken at *varying intervals throughout a course or programme* to provide information and feedback that will *help improve*
  - the quality of student learning
  - the quality of the course itself

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## Key Elements of Formative Assessment

94

1. The *identification* of learning goals, intentions or outcomes and criteria for achieving these.
2. Rich *conversations* between teachers & students that continually build and go deeper.
3. The provision of effective, *timely feedback* to enable students to advance their learning.
4. The *active involvement of students* in their own learning.
5. *Teachers responding* to identified learning needs and strengths by modifying their teaching approach(es).

*Black & William, 1998*

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## Summative Assessment

95

- Assessment **of** learning
- Generally *taken by students at the end of a unit or semester or programme* to demonstrate the "sum" of what they have or have not learned.
- Summative assessment methods are the most *traditional way of evaluating student work*.
- "Good summative assessments--tests and other graded evaluations--must be demonstrably reliable, valid, and free of bias" (*Angelo and Cross, 1993*).

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### Formative

96

- **'... often means no more than that the assessment is carried out frequently and is planned at the same time as teaching.'** (*Black and Wiliam, 1999*)
- **'... provides feedback which leads to students recognizing the (learning) gap and closing it ... it is forward looking ...'** (*Harlen, 1998*)
- **'... includes both feedback and self-monitoring.'** (*Sadler, 1989*)
- **'... is used essentially to feed back into the teaching and learning process.'** (*Tunstall and Gipps, 1996*)

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### Summative

- **'...assessment (that) has increasingly been used to sum up learning...'** (*Black and Wiliam, 1999*)
- **'... looks at past achievements ... adds procedures or tests to existing work ... involves only marking and feedback grades to student ... is separated from teaching ... is carried out at intervals when achievement has to be summarized and reported.'** (*Harlen, 1998*)





# AfSL: Assessing Expected Learning Outcomes

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## Assessing ELOs

98

- Process to insure **students achieve proficiency** in skills and competences described by ELOs
- Assessing proficiency for ELOs typically involves **performance measures** from work, activity, and behavior **in the particular courses**
  - Other measures **include standardized exams**, reviews of student **performance during co-op or internship**

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## How to Approach Teaching and Learning and Assessment Schemes to aligning with ELOs in Your Curriculum Design

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## Approach 1: Design Performance Criteria

1. From each ELO discuss and write down the tasks or activities that you think you students should perform to indicate the understanding or having skill stated in the ELO.
2. How can these tasks/activities be teach?
3. How will these activities/tasks be evaluated?

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## Specific Expected Learning Outcomes (ELOs)

101

**ELO 1:** .....

**Performance criteria 1:** .....

**Performance criteria 2:** .....

**Performance criteria 3:** .....

**ELO 2:** .....

**Performance criteria 1:** .....

**Performance criteria 2:** .....

**Performance criteria 3:** .....

**ELO 3:** .....

**Performance criteria 1:** .....

**Performance criteria 2:** .....

**Performance criteria 3:** .....



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## Student Outcomes and Corresponding Performance Criteria

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**ELO 4: an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice**

Criterion 4.1 Uses computer simulation and modeling

Criterion 4.2 Maintains current abilities in professional software use

Criterion 4.3 Seeks and uses resources for problem solving



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| <b>ELO 4:</b> Use the techniques, skills, and modern engineering tools necessary for engineering practice. |  |   |                                      |
|--|--|---|--------------------------------------|
| <b>Performance Criteria</b>  | <b>Student Learning</b>                        | <b>Teaching Activities</b>                  | <b>Assessment Methods</b>            |
| 4.1 Uses computer simulation and modeling  | Experience in using computer simulation        | Set of reading, Labs, assignment and report | Weekly homework, quizzes and rubric. |
| 4.2 Maintains current abilities in professional software use   | Using current professional software            | Set of reading, Labs, assignment and report | Weekly homework, quizzes and rubric. |
| 4.3 Seeks and uses resources for problem solving   | Problem solving skill under resources provided | Assignment and report                       | Rubric                               |



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## Assessment Plan

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1. From the performance criteria transfer to students' performance and/or behavior
2. Design when these performances should be measured  
→ Assessment Timeline
3. Should the measurement be Formative or Summative?
4. Should it be Course, Unit, Module or Exit assessments?
5. The last, what the measurement method should be applied to each performance criteria



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## Assessment Timeline

105

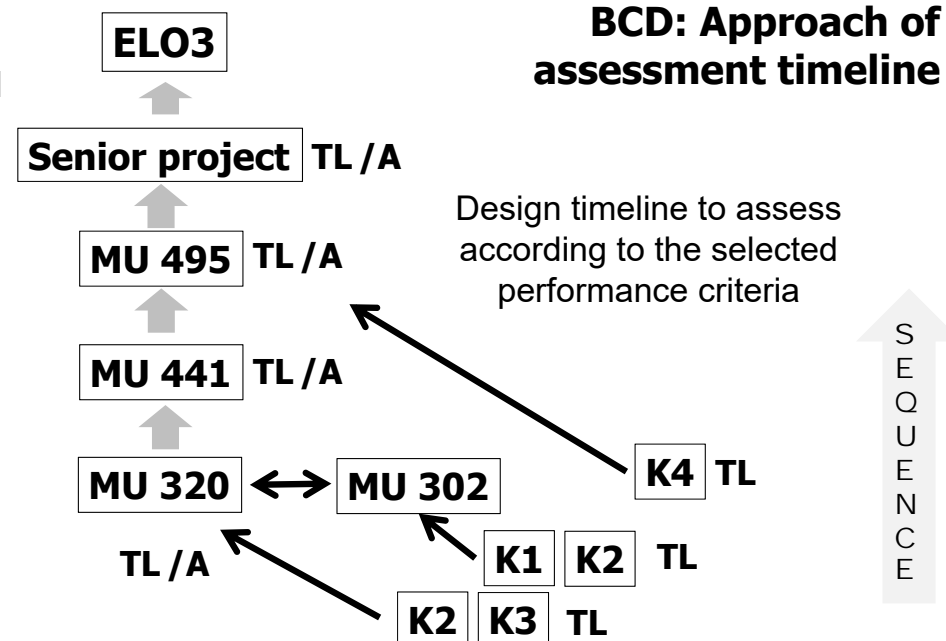
- Indicates when and how *student achievement* will be assessed (summative)
- Indicates when and how *student progress* will be assessed (formative)
- When and where:
  - Links assessment of skill and knowledge to ELOs (drawn from the Curriculum Map)
  - Determine performance criteria (work, activity or behavior) for evaluating each particular ELO



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## BCD: Approach of assessment timeline

106



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## Curriculum Map: Course matrix

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| COURSES            | ELO1     | ELO2   | ELO3   | ELO4    | ELO5 |
|--------------------|----------|--------|--------|---------|------|
| GE Courses         |          |        |        |         |      |
| Core Courses       |          |        |        |         |      |
| MU 301             | K5/SS1   |        |        | GS1     |      |
| MU 302             |          | K6/SS2 | K6/SS4 |         | GS2  |
| MU 320             | K7/SS3   |        | K8/SS5 |         | GS2  |
| Specialize Courses |          |        |        |         |      |
| MU 421             | SS6      |        |        | GS1     |      |
| MU 441             |          | SS7    | SS8    |         | GS2  |
| MU 495             | SS9      | SS10   | SS11/A | GS3     | GS4  |
| Senior Project     | SS1-11/A |        |        | GS1-4/A |      |



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## Assessment Schemes: ELO3

Identify the method of assessment

108

| Scheme            | Timelines                   | Identify student performance (task) | Assessment method |
|-------------------|-----------------------------|-------------------------------------|-------------------|
| Course assessment | MU 320                      | Final exam                          | MCQ/ Assignment   |
|                   | MU 441                      | Final exam/ Lab results             | MCQ/ Assignment   |
|                   | MU 495                      | SS4, SS5, SS8                       | Rubric            |
| Senior project    | Seminar presentation        | Methodology                         | Rubric            |
|                   |                             | Apply knowledge                     |                   |
|                   |                             | Report and presentation             |                   |
|                   |                             | Life-long learning                  |                   |
| Fieldwork         | End of work                 | SS9-SS11                            | Portfolio         |
| Exit assessment   | End of year 4 <sup>th</sup> | Integration of knowledge and skills | Interview         |

## Exercise : Design your assessment plan

109

Using your formulated Performance Indicators and Curriculum Map to design your curriculum plan and the assessment methods to measure student performances and behaviors to achieve each particular ELO.

Group discussion: ..... hrs

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## Creating and Using Scoring Rubrics

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## Criterion Referenced Assessment

111

**CRA** is the process of evaluating (and grading) the *learning of students against a set of pre-specified qualities or criteria*, without reference to the achievement of others (Brown, 1998; Harvey, 2004).

The pre-specified qualities or *criteria are what students have to do* during assessment in order *to demonstrate that they have achieved the learning outcomes*. How well they do this is described at different levels - these are *standards* (or *performance descriptors*).

*Thus, CRA is assessment that has standards which are 'referenced' to criteria.*

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## What is the value of CRA?

112

Criterion referenced assessment is an important foundation for engaging students with the learning process. When done well, it:

- provides a shared language between students, teachers, and assessors about assessment
- identifies what is valued in a curriculum and ensures that what is measured by assessment is the same as the skills, knowledge and understandings defined by the intended learning outcomes
- makes explicit to students and assessors what evidence of achievement is expected at each of the grade standards

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- enables reliable and valid judgements about student work which in turn provide:
  - comparability between assessors and streamlined moderation processes
  - relevant feedback to students about the quality of their work, and what is required for improvement on future assessments
  - transparent and defensible marks and grades
- enables evaluation of how well students have achieved the unit's ILOs, and identification of teaching, learning, and assessment practices that may need review
- supports students to develop strong self-evaluation capacity, providing tools for them to review, refine, and improve their own work

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## Meaning of CRA.....In conclusion.....

114

CRA means that the assessment process is transparent for students and the grades they receive for a unit can be traced to their specific performance on each of the set tasks. Criterion-referencing can also enable reporting of student achievement or progress on a series of key criteria rather than as a single grade or percentage.

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## What does CRA involve?

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1. Rubrics (criteria sheets) that are provided to students when the assessment task is assigned, and which contain:
  - a. Specific criteria for each assessment task in a unit (that enable measurement of ILOs)
  - b. Meaningful standards descriptors for each assessment criterion (specific to the task)
2. Moderation of criteria and standards, and active familiarisation of students with them, prior to submission of the assessment task
3. Use of the rubric when assessing student work, to assign a grade and provide feedback (and feedforward) to students
4. Review (and modification) of the criteria and standards descriptors after marking of each assessment task

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## What is a RUBRICS?

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A rubric is *an assessment tool* often shaped like a matrix, which *describes levels of achievement* in a specific area of performance, understanding, or behavior.

**Rubrics are criterion-referenced, rather than norm-referenced.**

<http://manoa.hawaii.edu/assessment/howto/rubrics.htm#p5>

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## Why use a rubric?

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### For students → Advantages

- to know what they need to do to be successful
- provide explicit guidelines regarding task expectations
- use them as a tool to develop their own learning

### For staff

- use rubric-based activities to engage students in formative feedback to improve their work before it is due
- provide common basis from which to make judgements for all markers
- provide justification which can be used as basis for further feedback



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## Types of rubrics

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There are two kinds of rubrics in common usage –  
**analytic rubrics and holistic rubrics**



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## Analytic standards

119 • Analytic standards describe separate levels of performance for each criterion.

- Analytic standards have the potential to provide more detailed feedback to students on how well they are doing in the various components of the task: this is particularly useful in formative assessment contexts where students are able to incorporate their learning from feedback into a subsequent task.
- Analytic standards may be easier for assessors to apply. They evaluate student performance more precisely, but may obscure its totality (Morgan et al., 2004; Biggs, 2003).



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## Analytic standards

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- Analytic standards are more likely to be used when the assessment task has a large number of criteria and where criteria are separately weighted (Mueller, 2006).
- It's worth noting however, that analytic standards with many criteria can be challenging for students to address since the task is broken up into many differentiated components.



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## Analytic Rubrics

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- **Two-dimensional rubrics with levels of students' achievement as columns and assessment criteria (performance criteria) as rows.**

- Allows you to assess students' achievements based on multiple criteria using a single rubric.
- You can assign different weights (value) to different criteria and include an overall achievement by totaling the criteria;

- Written in a table form.

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## Research Paper (Analytic Rubric)

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| Criteria  | Level of mastery / Scale   |   |   |  |
|---|--|---|---|--|
|   | Adequate (50-59%)  | Competent (60-69%)  | Good (70-79%)   | Excellent (80-100%)  |
| Knowledge of forms, conventions, terminology, and strategies relative to the importance of sources to subject | Demonstrates limited knowledge of forms, conventions, terminology, and strategies relative to importance of sources to subject | Demonstrates some knowledge of forms, conventions, terminology, and strategies relative to importance of sources to subject | Demonstrates considerable knowledge of forms, conventions, terminology, and strategies relative to importance of sources to subject | Demonstrates thorough and insightful knowledge of forms, conventions, terminology, and strategies relative to importance of sources to subject |
| Critical and creative thinking skills   | Uses critical and creative thinking skills with limited effectiveness  | Uses critical and creative thinking skills with moderate effectiveness  | Uses critical and creative thinking skills with considerable effectiveness  | Uses critical and creative thinking skills with a high degree of effectiveness   |
| Communication of information and idea   | Communicates information and idea with limited clarity   | Communicates information and ideas with some clarity  | Communicates information and ideas with considerable clarity  | Communicates information and ideas with a high degree of clarity and with confidence   |
| Quality of argument and writing   | Argument is simple and unoriginal, and the writing is weak and inconsistent  | Argument takes on a fair and expected position, and the writing is moderately clear and coherent                            | Argument bridges on the complex and original, and the writing is clear and coherent   | Argument is complex and original, and the writing is strong, fluid, and creatively coherent  |
| Spelling and grammar  | Several errors in spelling and grammar   | A few errors in spelling and grammar  | Some errors in spelling and grammar   | No errors in spelling and grammar  |

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## Holistic standards

- 123
- Holistic standards are useful when the sum of the student's performance in a task is more important than their performance in component parts.
  - Holistic standards may be more suited to assessing complex higher order thinking tasks and to tasks where it is not easy to separate the performance of one criterion from another.
  - Many academic writing standards are holistic "because it is not always easy to disentangle clarity from organization or content from presentation" (<http://jfmuellet.faculty.noctrl.edu/toolbox/rubrics.htm>).
  - Depending on their detail, holistic standards may give only general or limited guidance to students about how to perform different characteristics of the task. Detailed holistic standards with multiple criteria may be more difficult for markers to apply.

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## Holistic rubrics

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- Single criteria rubrics (performance criteria) used to assess a **students' overall achievement** on an activity or item based on predefined achievement levels
- Performance descriptions are written in paragraphs and usually in full sentences.

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## Research Paper (Holistic Rubric)

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| Score                 | Criteria   |
|-----------------------|--|
| <b>4</b><br>(80-100%) | Research paper demonstrates complete understanding and execution of the assigned objectives. Thesis statement/argument is clearly stated, complex and original, and the writing does not spend excessive time on any one point of development at the expense of developing other points in the body of the paper. Writing is also error-free, without ambiguity, and reads smoothly, creatively, and with a purpose. |
| <b>3</b><br>(70-79%)  | Research paper demonstrates considerable understanding and execution of the assigned objectives. Thesis statement/argument is stated, verges on the complex and original, and the writing shows accuracy and balance in developing body points, but may exhibit occasional weaknesses and lapses in correctness. Writing also has some errors and ambiguities, yet does read clearly and coherently.                 |
| <b>2</b><br>(60-69%)  | Research paper demonstrates some understanding and execution of the assigned objectives. Thesis statement/argument is faintly stated and/or expected and not confident, and the writing is inconsistent in terms of balance in developing body points, and exhibits weaknesses and lapses in correctness. Writing also has many errors and ambiguities, and may read confusingly and incoherently.                   |
| <b>1</b><br>(50-59%)  | Research paper demonstrates limited understanding and execution of the assigned objectives. Thesis statement/argument is simplistic, unoriginal, and/or not present at all, and the writing is unbalanced in developing body points, weak, and incomplete. Writing also has numerous errors and ambiguities, and reads confusingly and incoherently.   |

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*Adapted from John Bean, Engaging Ideas, Exhibit 15.4:  
Holistic Scale for Grading Article Summaries*



## Grading Rubrics: Sample Scales

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### Three Levels

|             |                 |              |
|-------------|-----------------|--------------|
| Weak        | Satisfactory    | Strong       |
| Beginning   | Intermediate    | High         |
| Weak        | Average         | Excellent    |
| Developing  | Competent       | Exemplary    |
| Low Mastery | Average Mastery | High Mastery |

### Four Levels

|                   |                   |                    |                      |
|-------------------|-------------------|--------------------|----------------------|
| Unacceptable      | Marginal          | Proficient         | Distinguished        |
| Beginning         | Developing        | Accomplished       | Exemplary            |
| Needs Improvement | Satisfactory      | Good               | Accomplished         |
| Emerging          | Progressing       | Partial Mastery    | Mastery              |
| Not Yet Competent | Partly Competent  | Competent          | Sophisticated        |
| Inadequate        | Needs Improvement | Meets Expectations | Exceeds Expectations |
| Poor              | Fair              | Good               | Excellent            |

### Five Levels

|              |              |              |               |           |
|--------------|--------------|--------------|---------------|-----------|
| Poor         | Minimal      | Sufficient   | Above Average | Excellent |
| Novice       | Intermediate | Proficient   | Distinguished | Master    |
| Unacceptable | Poor         | Satisfactory | Good          | Excellent |

### Six Levels

|              |          |                      |            |              |           |
|--------------|----------|----------------------|------------|--------------|-----------|
| Unacceptable | Emerging | Minimally Acceptable | Acceptable | Accomplished | Exemplary |
|--------------|----------|----------------------|------------|--------------|-----------|

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## Single-Point Rubric

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| Criteria  | 1 | 2 | 3 | 4 | Comments |
|---|---|---|---|---|----------|
| <b>Category #1:</b><br>Description reflecting achievement of mastery level of performance |   |   |   |   |          |
| <b>Category #2:</b><br>Description reflecting achievement of mastery level of performance |   |   |   |   |          |
| <b>Category #3:</b><br>Description reflecting achievement of mastery level of performance |   |   |   |   |          |
| <b>Category #4:</b><br>Description reflecting achievement of mastery level of performance |   |   |   |   |          |

## What are the parts of a analytic rubrics?

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Analytic rubrics are composed of **four** basic parts including:

- 1. A task description.** The outcome being assessed.
- 2. The characteristics or criteria to be rated** (each row). The criteria described as skills, knowledge, and/or behavior to be demonstrated.
- 3. Levels of mastery/scale** (columns).
- 4. A description of each characteristic** at each level of mastery/scale (cells).

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## What are the parts of a analytic rubric? 1/4

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**1. A task description.** The outcome being assessed or instructions students received for an assignment.

<https://www.cte.cornell.edu/documents/Science%20Rubrics.pdf>

### Research Paper Rubric

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Score: \_\_\_\_\_

| Category                | Exceeds Standard   | Meets Standard  | Nearly Meets Standard  | Does Not Meet Standard  |
|-------------------------|--|---|--|---|
| <b>Title Page</b>       | Title<br>Your Name, Teacher's Name,<br>Course Period,<br>Date, Neatly finished-no<br>errors                      | Evidence of four  | Evidence of 3  | Evidence of 2 or less   |
| <b>Thesis Statement</b> | Clearly and concisely states the paper's purpose in a single sentence, which is engaging, and thought provoking. | Clearly states the paper's purpose in a single sentence.                        | States the paper's purpose in a single sentence.   | Incomplete and/or unfocused.  |
| <b>Introduction</b>     | The introduction is engaging, states the main topic and previews the structure of the paper.                     | The introduction states the main topic and previews the structure of the paper. | The introduction states the main topic but does not adequately preview the structure of the paper. | There is no clear introduction or main topic and the structure of the paper is missing. |

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## What are the parts of a analytic rubric? 2/4

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**2. The characteristics or criteria to be rated** (each row). The criteria described as skills, knowledge, and/or behavior to be demonstrated.

<https://www.cte.cornell.edu/documents/Science%20Rubrics.pdf>

### Research Paper Rubric

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Score: \_\_\_\_\_

| Category                | Exceeds Standard   | Meets Standard  | Nearly Meets Standard  | Does Not Meet Standard  |
|-------------------------|--|---|--|---|
| <b>Title Page</b>       | Title<br>Your Name, Teacher's Name,<br>Course Period,<br>Date, Neatly finished-no<br>errors                      | Evidence of four  | Evidence of 3  | Evidence of 2 or less   |
| <b>Thesis Statement</b> | Clearly and concisely states the paper's purpose in a single sentence, which is engaging, and thought provoking. | Clearly states the paper's purpose in a single sentence.                        | States the paper's purpose in a single sentence.   | Incomplete and/or unfocused.  |
| <b>Introduction</b>     | The introduction is engaging, states the main topic and previews the structure of the paper.                     | The introduction states the main topic and previews the structure of the paper. | The introduction states the main topic but does not adequately preview the structure of the paper. | There is no clear introduction or main topic and the structure of the paper is missing. |

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## What are the parts of a analytic rubric? 3/4

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**3. Levels of mastery/scale** (columns). Labels used to describe the levels of mastery should be tactful and clear. Commonly used labels are:

- Not meeting, approaching, meeting, exceeding
- Exemplary, proficient, marginal, unacceptable
- Advanced, intermediate high, intermediate, novice
- 1, 2, 3, 4

<https://www.cte.cornell.edu/documents/Science%20Rubrics.pdf>

### Research Paper Rubric

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Score: \_\_\_\_\_

| Category          | Exceeds Standard  | Meets Standard   | Nearly Meets Standard | Does Not Meet Standard | No Evidence | Score |
|-------------------|---|------------------|-----------------------|------------------------|-------------|-------|
| <b>Title Page</b> | Title<br>Your Name, Teacher's Name,<br>Course Period,<br>Date, Neatly finished-no<br>errors | Evidence of four | Evidence of 3         | Evidence of 2 or less  | Absent      |       |

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## What are the parts of a analytic rubric? 4/4

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**4. A description of each characteristic** at each level of mastery/scale (cells).

<https://www.cte.cornell.edu/documents/Science%20Rubrics.pdf>

### Research Paper Rubric

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Score: \_\_\_\_\_

| Category                       | Exceeds Standard   | Meets Standard  | Nearly Meets Standard  | Does Not Meet Standard  | No Evidence         | Score |
|--------------------------------|--|---|--|---|---------------------|-------|
| <b>Title Page</b>              | Title<br>Your Name, Teacher's Name,<br>Course Period,<br>Date, Neatly finished-no<br>errors                      | Evidence of four  | Evidence of 3  | Evidence of 2 or less   | Absent              |       |
| <b>Thesis Statement</b>        | Clearly and concisely states the paper's purpose in a single sentence, which is engaging, and thought provoking. | Clearly states the paper's purpose in a single sentence.                              | States the paper's purpose in a single sentence.   | Incomplete and/or unfocused.  | Absent, no evidence |       |
| <b>Introduction</b>            | The introduction is engaging, states the main topic and previews the structure of the paper.                     | The introduction states the main topic and previews the structure of the paper.       | The introduction states the main topic but does not adequately preview the structure of the paper. | There is no clear introduction or main topic and the structure of the paper is missing. | Absent, no evidence |       |
| <b>Body</b>                    | Each paragraph has thoughtful supporting detail sentences that develop the main idea.                            | Each paragraph has sufficient supporting detail sentences that develop the main idea. | Each paragraph lacks supporting detail sentences.  | Each paragraph fails to develop the main idea.  | Not applicable      |       |
| <b>Organization-Structural</b> | Writer demonstrates logical and subtle sequencing of ideas through well-developed                                | Paragraph development present but not perfected.                                      | Logical organization; organization of ideas not fully developed.                                   | No evidence of structure or organization.   | Not applicable      |       |

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## The descriptors

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The process of writing descriptors as following:

- Begin with the Pass standard (PS) – What would you accept as passing level, recognising that the student achieved the criteria as it was written, but has not gone beyond it? The main substance of the criteria is being addressed
- Next the High Distinction (HD) standard - What is it possible for a student to achieve if they had thoroughly engaged with the learning that is associated with the task? Students at this level still need specific feedback on what they did well, so they can do it again. Yes, meaning the student has fully addressed the criteria plus done something beyond that or something you might not have expected.

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- Next the Fail standard (FL) – This would be what you might indicate to students prior to their submission about what not to do. You hope no-one ever produces work that matches this description. It is best to give a mix of descriptions and areas for improvement.
- Then go to the Credit (CR) and the Distinction (DN) standards –these are usually the **hardest to write**, because you are referencing the standard on either side all the time. Sometimes the best thing is to write the descriptor based on the task, and then look at them in relation to each other.

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- Try to avoid just changing the adjective (consistent, thorough, satisfactory, limited, poor) because this does not have as much meaning, and does not provide a good basis for feedback
- Once drafted, talk about your rubric to your teaching colleagues and students. Work it through and make adjustments based on language and complexity. Rubrics are dynamic and worth revisiting after each offer of the course, when you can make adjustments and refine your expression. It's important to accept that it's an ongoing process that takes time but will enhance student learning outcomes – your goal!!

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## Scoring

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| PRESENTATION   |  |  |  |   |
|--|--|--|--|---|
|  | LEVEL 4  | LEVEL 3                                      | LEVEL 2                                  | LEVEL 1   |
|  | Exceptional                                    | Effective                                    | Acceptable                               | Developing  |
| Knowledge / Understanding  |  |  |  |   |
| Demonstrates an understanding of the topic   | thorough understanding                         | considerable understanding                   | moderate understanding                   | emerging understanding                              |
| Inquiry / Thinking   |  |  |  |   |
| Develops and supports an original idea or opinion about the topic                        | thorough development and support               | considerable development and support         | moderate development and support         | emerging sense of development and support           |
| Communication  |  |  |  |   |
| Addresses audience and speaks clearly with fluency, structure, and purpose               | high degree of fluency, structure, and purpose | considerable fluency, structure, and purpose | moderate fluency, structure, and purpose | emerging fluency and sense of structure and purpose |
| Application  |  |  |  |   |
| Exercises rhetorical skills such as emphasis, timing, pacing, reasoning, and questioning | high degree of skill                           | considerable skill                           | moderate skill                           | emerging skill                                      |

$$\text{Overall Grade: } \frac{9}{16} = 56\%$$

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## Step of developing a rubric

- 137 STEP 1: Formulate performance criteria of each learning outcome
- STEP 2: Identify student performance, task and/or behavior to be measured
- STEP 3: Design whether should be formative (analytic rubric) or summative assessment (holistic rubric)
- STEP 4: Define the assessment timeline
- STEP 5: Write narrative descriptions
- STEP 6: Complete the rubric by describing other levels on the continuum that ranges from excellent to poor work
- STEP 7: Collect samples of student work that exemplify each level
- STEP 8: Revise the rubrics, as necessary



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## Exercise : Develop a holistic/analytic rubric

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From your ELOs, determine a holistic/analytic rubric to assess student performance of a particular learning outcome.



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