جامعة الملك عبد العزيز
عمادة الجودة
والاعتماد الأكاديمي

صياغة مخرجات التعلم للمقررات
Formulating Course Learning Outcomes

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رئيسة وحدة مخرجات التعلم في عمادة الجودة و الاعتماد الأكاديمي

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- **الهدف من المحاضرة**

  طرح مبادئ صياغة مخرجات التعلم على مستوى المقرر و ذلك حسب متطلبات NCAAA

- **مخرجات المحاضرة**

  أن يكون عضو هيئة التدريس قادرا على أن:

  - يصيغ مخرجات تعلم فعالة على مستوى المقرر
  - ينقد مخرجات التعلم بطريقة بناءة بهدف التحسين و التطوير
  - يربط مخرجات التعلم باستراتيجيات التدريس و طرق التقويم باتساق

Disclosure Statement

We do not represent NCAAA

Part 1: Concepts related to Learning Outcomes

1. Student centered vs. teacher centered

2. Outcome based Education

Teacher-Centered Approach	Student-Centered Approach[3]
1. Knowledge is transmitted from professor to students.	1. Construct knowledge through gathering and synthesizing information and integrating it with skills of inquiry (communication, critical thinking, problem solving, and so on).
2. Students passively receive information.	2. Students are actively involved.
3. Instructor's role is to be the primary information giver.	3. Instructor's role is to coach and facilitate.
4. Teaching and Assessing are separate.	4. Teaching and assessing are aligned and integrated.
5. Assessment is used to monitor learning.	5. Assessment is used to promote learning.
6. Emphasis is on right answers.	6. Emphasis is on generating better questions and learning from errors.
7. Desired learning is assessed indirectly through use of objectively scored tests.	7. Desired learning is assessed directly through papers, projects, performances, and portfolios.
8. Focus is on a single discipline.	8. Approach is compatible with interdisciplinary investigation.
9. Culture is competitive and individualistic.	9. Culture is cooperative, collaborative, and supportive.
10. Only students are viewed as learners.	10. Instructors and students learn together.

[3]Huba and Freed, 2000)

Teacher centered approach	Student centered approach
How do I transfer knowledge to the students?	How will the students be able to do on completion of their concourse of study?
Courses of study are described in terms of content	Courses of study are described in terms of expected student learning outcomes

Student Centered vs. Teacher Centered

Students learn best when:

1. They have a context for new knowledge and new experiences

2. Their interest is captured

3. They use what they know and apply it to real world or real life experience

4. They have the opportunity to synthesize and reflect on what they have learned

Reporter: Robelyn Sabior

Outcome Based education (OBE)

- Implementation of the Saudi Arabian Qualification Framework (SAQF).

- All Saudi Universities have adopted an outcome-based educational model.

Outcome Based Education (OBE)

OBE focuses on what students know and what they can actually do.

It is a "design down" approach to curriculum development :

1. Key feature: using learning outcomes (LO) statements that state what the student is expected to be able to know, understand or do

2. Providing learning activities which will help the student to reach these outcomes

3. Assessing the extent to which the student meets these outcomes through the use of specific assessment criteria.

Advantages of OBE[4]

1. Collaborative curriculum planning.

2. Evaluating and improving the curriculum.

3. Enhance the quality of teaching and learning by ensuring accountability and quality assurance.

4. Ensure the accreditation of new and existing programs.

5. Students take responsibility for their own learning.

6. Means for students to communicate the knowledge, skills and experience acquired.

Top 10 skills

in 2020

1. Complex Problem Solving
2. Critical Thinking
3. Creativity
4. People Management
5. Coordinating with Others
6. Emotional Intelligence
7. Judgment and Decision Making
8. Service Orientation
9. Negotiation
10. Cognitive Flexibility

in 2015

1. Complex Problem Solving
2. Coordinating with Others
3. People Management
4. Critical Thinking
5. Negotiation
6. Quality Control
7. Service Orientation
8. Judgment and Decision Making
9. Active Listening
10. Creativity

Source: Future of Jobs Report, World Economic Forum

Summary of Part 1:
Concepts related to Learning Outcomes

1.   Student centered vs. teacher centered

2.   Outcome based Education

Part 2: Formulating Learning Outcomes

1. What are Learning Outcomes (LO)?

2. Objectives vs. learning outcomes

3. NQF (5)/ SAQF (3)

4. Formulating LO's

1. What are Learning Outcomes (LO)

- Learning Outcomes are specific statements of what students should know and be able to do as a result of learning (Morss and Murray, 2005)
- A learning outcome is "a statement of what a learner knows, understands and is able to do on completion of a learning process" (European Qualifiations Framework)
- Learning outcomes are explicit statements of what we want our students to know, understand or to be able to do as a result of completing our courses. (Univ. New South W ales, Australia)
- "Learning outcomes are statements that specify what learners will know or be able to do as a result of a learning activity. Outcomes are usually expressed as knowledge, skills or attitudes". (American Association of Law Libraries).

Dr. Declan Kennedy presentation Nov 27, 2016

1. What are Learning Outcomes (LO)

- **NCAAA definition**:

Are statements of what the student will know and be able to do or demonstrate because of their learning and are part of a student-centered approach.
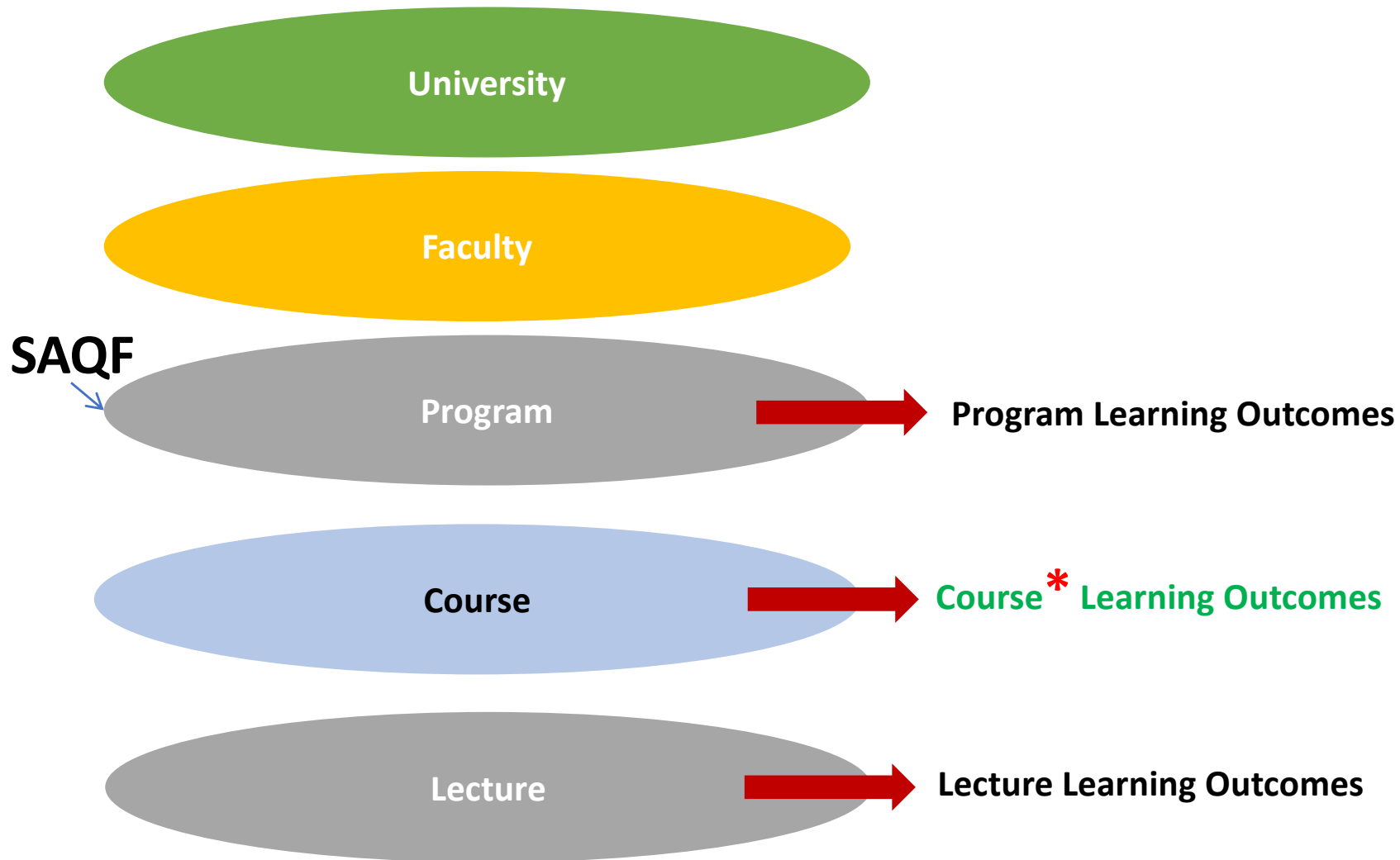
- **Synonyms: ?**

Why Learning Outcomes (LO)?

Rationale of implementing LO:

- Clear to students what is expected of them

- Clear to teachers what students are expected to learn in the course/program

- Facilitate teachers to select the most appropriate teaching strategy

- Facilitate teachers to select the most appropriate assessment strategy

- Represent transparency within higher education systems Nationally and Internationally.

Applications of LO:

- Individual higher education institution (Mission statement of the University/Faculty, for course and programs of study).

- Nationally (for qualifications, qualifications frameworks and quality assurance regimes).

- Internationally (for wider recognition and accreditation purposes).

SAQF

University	
Faculty	
Program	→ **Program Learning Outcomes**
Course	→ **Course* Learning Outcomes**
Lecture	→ **Lecture Learning Outcomes**

Ref: Duclan Kennedy (2007) with modifications

D. Meisha @
KAUDQAA

Program Learning Outcomes

Students graduating with a B.S. in Physics should be able to:

1. Students will demonstrate proficiency in mathematics and the mathematical concepts needed for a proper understanding of physics.

2. Students will demonstrate knowledge of classical mechanics, electromagnetism, quantum mechanics, and thermal physics, and be able to apply this knowledge to analyze a variety of physical phenomena.

3. Students will show that they have learned laboratory skills, enabling them to take measurements in a physics laboratory and analyze the measurements to draw valid conclusions.

k

4. Students will be capable of oral and written scientific communication, and will prove that they can think critically and work independently.

Course Learning Outcomes

What factors to consider when formulating LOs?

- **Program Mission & Vision**

- **Graduates Attributes**

- **Job market need**

- **Academic & Professional Standards**

- **Alignment with National Standards (Domains: NQF/ SAQF)**

Mapping Learning Outcomes (LO)?

5. Map course LOs with the program LOs.

5. Map course LOs with the program LOs. (Place course LO #s in the left column and program LO #s across the top.)

Course LOs #	Program Learning Outcomes (Use Program LO Code #s provided in the Program Specifications)								
	1.1		2.1	2. 2	2.4		3.3		4.1
1.1	√								
1.2	√								
2.1			√	√					
2.2					√				
3.1							√		
4.1									√

NCAAA Course Specification Old Template

Part 2: Formulating Learning Outcomes

1. What are Learning Outcomes (LO)?

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2. Objectives vs Learning Outcomes

Objectives of a course / program	Leaning Outcomes
A broad general statement of the teaching intention	Are statements of what the students will be able to do or demonstrate as a result of their learning
Not intended to be measured	Intended to be measured
Part of a teacher-centered approach.	Part of a student-centered approach.
Outline the material the instructor intends to cover (what the instructor is responsible for)	Focus on what the students know, and are able to do by the end of a course.

Examples

- **Example of a Learning Objective**:

Students will be taught the basic principles of database searching. [teacher will teach basic principles …]

- **Example of a Learning Outcome**:

Students will be able to apply the principles of database searching in a review of literature. [student will KNOW and APPLY…]

Objectives or Outcomes?

Which _Pharmacist_ do you want filling your meds?

Student A: **The teacher will instruct the students to know how to successfully fill medical prescriptions...**

Student B: **The student earns 100% on the exam for filling medical prescriptions....**

Student C: **The student knows how and successfully fills medical prescriptions...**
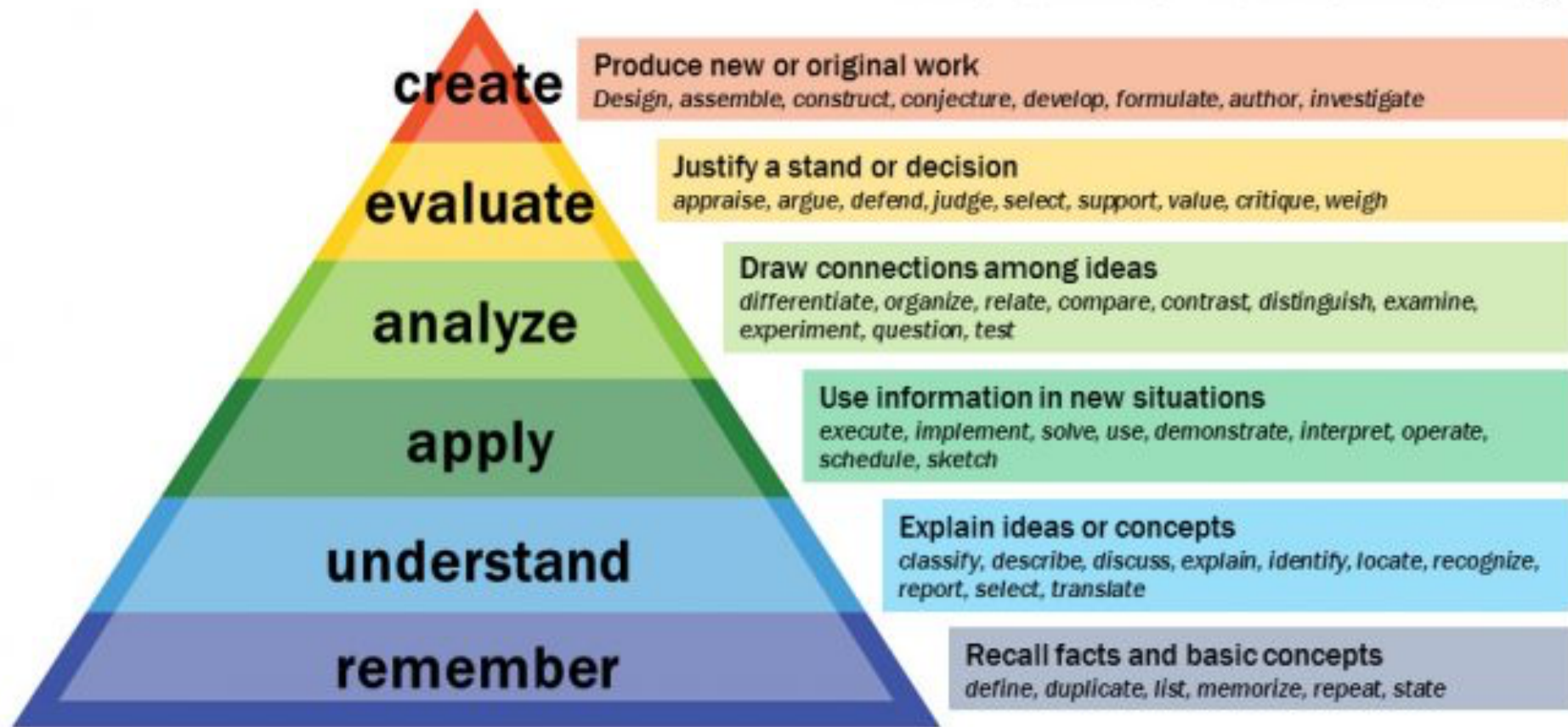
Student D: **The teacher successfully taught the student to fill medical prescriptions....**

Part 2: Formulating Learning Outcomes

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Bloom's Taxonomy

create — Produce new or original work
Design, assemble, construct, conjecture, develop, formulate, author, investigate

evaluate — Justify a stand or decision
appraise, argue, defend, judge, select, support, value, critique, weigh

analyze — Draw connections among ideas
differentiate, organize, relate, compare, contrast, distinguish, examine, experiment, question, test

apply — Use information in new situations
execute, implement, solve, use, demonstrate, interpret, operate, schedule, sketch

understand — Explain ideas or concepts
classify, describe, discuss, explain, identify, locate, recognize, report, select, translate

remember — Recall facts and basic concepts
define, duplicate, list, memorize, repeat, state

Vanderbilt University Center for Teaching

National Qualifications Framework (NQF)

Domains of Learning Outcome

1. Knowledge

2. Cognitive Skills

3. Interpersonal Skills and Responsibility

Ability to **recall, understand**, and present information

Ability to **understand concepts**, **theories and critical thinking** and creative **problem solving** skills

Ability **to take responsibility** for own learning, **work in groups**, **act responsibly** and **ethically**

D. Meisha @ KAUDQAA

National Qualifications Framework (NQF)

4. IT and Numerical Skills

The ability to communicate in oral and written form, **use IT**, and **mathematical skills**.

5. Psychomotor Skills

For fields of study where **psychomotor skills** are important (example dentistry, surgery, arts)

Learning outcomes	Include	verb
1- Knowledge	Facts Concepts, theories, Procedures	Describe, define, explain, translate, discuss, list, name
2- Cognitive skills	Apply Creative thinking Problem solving	Use, apply, discover, evaluate, develop, recommend, design, measure, differentiate
3- Interpersonal skills and responsibility	Own learning, Group work Ethical standards, Behavior	Listens, help, interact, communicate,
4- Communication, IT, and numerical skills	Oral and written, communication, Use of IT Use of math and statistics	Count, use, communicate, prepare, show, formulate, calculate
5- Psychomotor	Draw, Hold	Test , Draw, paint, drill , produce, perform

4. Formulating LO's

Verbs to avoid (vague)

- Understand
- Appreciate
- Know about
- Become familiar with
- Learn about
- Become aware of
- Review
- Enlarge

- Deepen
- Continue
- Ensure
- Consider
- Develop
- Learn
- Understand

Avoid describing action taken by someone other than the learner:
"The program will..." or
"The course will..."

Domains of Learning Outcome

LEVEL 7					
	Knowledge	**Skills**	**Competence**		
	Theoretical, Factual	**Practical Application of Knowledge**	**Autonomy and Responsibility**	**Practice**	**Attributes**
Level 7	• Broad understanding and critical view of the principal theories, concepts and terminology of a discipline or field of work; • Knowledge in a range of different perspectives or schools of thought that underpin the discipline, profession or field of work; • Specialist knowledge informed by current developments of a discipline or field of work.	• Applying advanced skills, techniques, practices and creativity in specified discipline or field of work; • Practicing routine methods of enquiry, investigation and research for a defined project; • Critically evaluate the approaches and methods to solving problems; • Utilizing well-developed cognitive or technical skills for the analysis and evaluation of complex information.	• Working effectively in peer relationships, under guidance and autonomously; • Taking structured decisions in contexts that require self-directed work, learning and innovation; • Demonstrating the potential for management of complex technical or professional activities and project teams; • Decision-making in unpredictable work or learning contexts.	• Using theoretical principles for complex tasks in discipline or field of work; • Using advanced techniques for developing solutions to complex problems related to a discipline, profession or field of work; • Utilizing a range of sources to make judgments and decisions; • Analyzing and interpreting information for complex decisions and innovation.	• Awareness relating to the importance of building professional relationships; • • Displaying confidence and the potential for leadership and entrepreneurialism; • • Being respectful, team oriented and approachable in social and professional contexts; • • Developing a personal attitude towards values and ethics.

SAQF & NQF

مواءمة مجالات التعلم

التقويم والاعتماد الأكاديمي	الإطار الوطني للمؤهلات
المعرفة	المعرفة
المهارات المعرفية	
مهارات الاتصال وتقنية المعلومات والمهارات العددية	المهارة
المهارات النفسية الحركية	
مهارات التعامل مع الآخرين وتحمل المسؤولية	الكفاءة

عمل الإطار الوطني للمؤهلات بالشراكة مع الجهات ذات العلاقة على تضمين المعارف والمهارات والكفاءات في توصيف المستويات بما يخدم احتياجات ومتطلبات سوق العمل

NQF (5)　　　　　SAQF (3)

Mapping of NQF learning domain to SAQF learning domains

SAQF domains	NQF domains
Knowledge	Knowledge
Skills	Cognitive Skills
	Communication, Information Technology, Numerical
	Psychomotor
Competence	Interpersonal Skills & Responsibility

يتضمن الجدول ادناه افعالا يمكن الاستفادة منها عند صياغة مخرجات التعلم في كل مجال من مجالات التعلم:

الأفعال المقترحة	مجال التعلم
يفهم، يرتب، يصف، يسمي، يُعرف، يُعرّف، يحدد، يذكر، يختار، يُسمع، يشرح، يصنف، يلخص، يوضح، يفسر، يستعرض، يعيد... understand, arrange, describe, name, define, identify, mention, choose, recite, explain, classify, summarize, clarify, explicate, demonstrate, repeat ...	المعرفة Knowledge
يستخدم، يطبق، يظهر، يكتشف، ينفذ، يغير، يؤدي، يحلل، يبرهن، يقارن، يميز، يقيس، يخطط، يستنبط، يقابل، يقيم، يبرر، يدافع، يجادل، يوصي، يحكم على، يطور، يبني، ينشئ، يبتكر، يصمم، ينظم، يعدل، يعيد ترتيب، يؤسس، يصيغ، يرسم، يطبع، يمارس، يمسك، يركب، يعطي، يحضر، يناقش، يترجم... use, apply, show, discover, implement, change, perform, analyze, prove, compare, differentiate, measure, plan, synthesize, contrast, evaluate, justify, defend, argue, recommend, judge, develop, build, create, innovate, design, organize, modify, rearrange, establish, formulate, draw, print, practice, hold, install, give, bring, discuss, translate ...	المهارات Skills
يتقبل، يصغي، يتحمل، يساعد، يتفاعل، يتجاوب، يختار، يسهم، يتبع، يشارك، يطلب، يلتزم، يعبر عن، يزور، يقسم، يوزع، يخدم، يساند، يفضل، يبادر، يوافق، يكون قدوة، يقود، يتعاون، يتكيف، يتأقلم، يتواصل... accept, listen, tolerate, assist, interact, respond, select, participate, follow, share, request, commit, express, visit, divide, distribute, serve, support, prefer, initiate, agree, exemplify, lead, cooperate, adapt, adjust, communicate...	الكفاءات Competencies

Part 2: Formulating Learning Outcomes

1. What are Learning Outcomes (LO)?

2. Objectives vs. learning outcomes

3. NQF (5)/ SAQF (3)

4. Formulating LO's

4. Formulating LO's

Factors to consider when formulating LO's

1. Create statements that are student-centered rather than faculty-centered.

2. Focus on knowledge and skills that are central to the course topic and/or discipline.

3. Focus on the learning that results from the course rather than describing lessons or activities in the course.

4. Use active verbs to start the Student Learning Outcome statements.

4. Formulating LO's

6. Align the Course level LO's with the Program LO's level and within the different levels of the Program.

7. Limit the Course-level LO's to ??? statements for the entire course.

8. More detailed, specific outcomes can be developed for individual units or assignments within the course

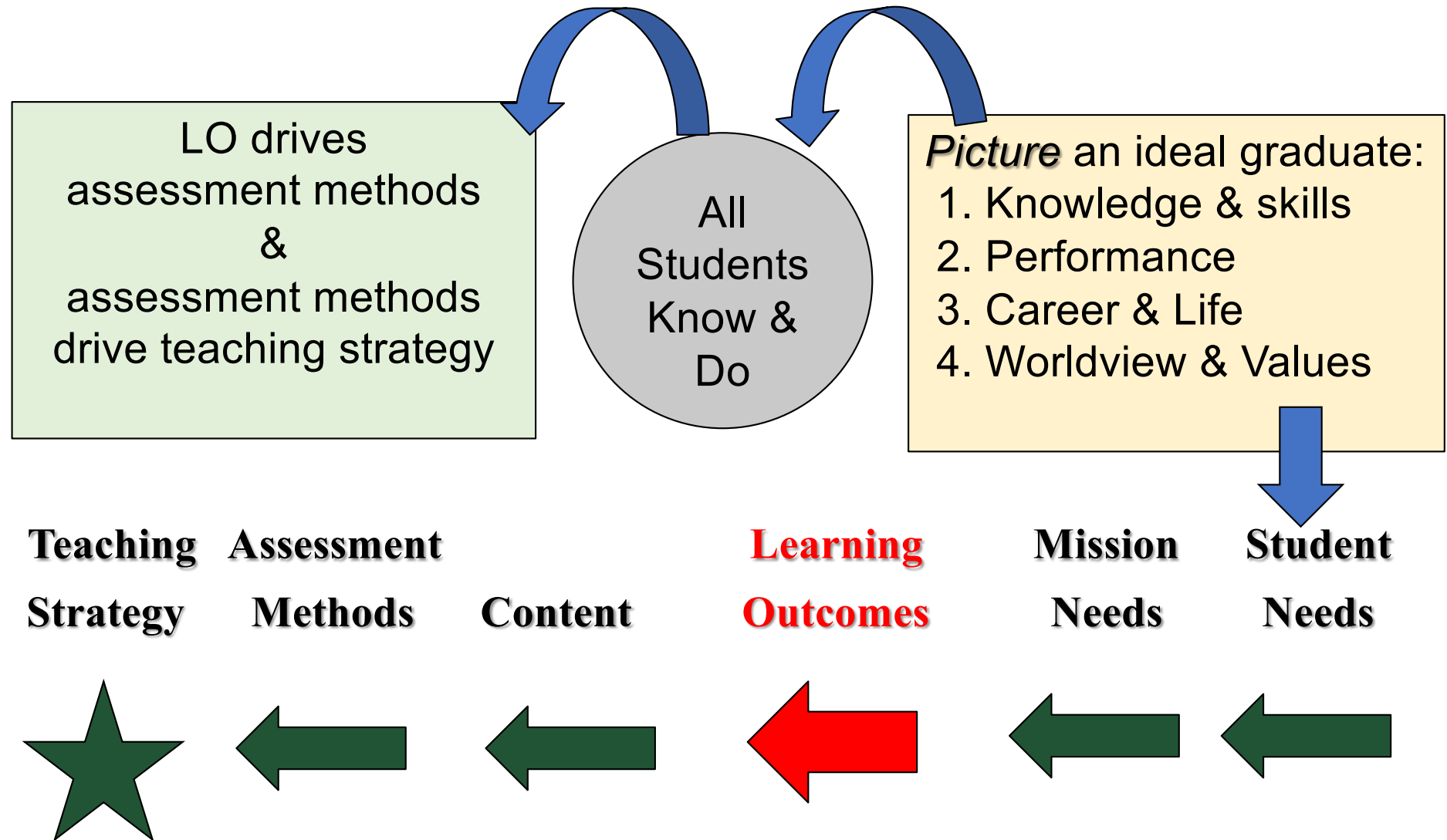# 4. Formulating LO's

6. Align the Course level LO's with the Program LO's level and within the different levels of the Program.

7. Limit the Course-level LO's to 6-10 statements for the entire course.

8. More detailed, specific outcomes can be developed for individual units or assignments within the course

SMART Learning Outcome:

S pecific

M easurable

A ppropriate and action-oriented

R ealistic

T estable and time specific

Adapted from Butcher et al., 2006

Start at the End

LO drives
assessment methods
&
assessment methods
drive teaching strategy

All
Students
Know &
Do

Picture an ideal graduate:
1. Knowledge & skills
2. Performance
3. Career & Life
4. Worldview & Values

| Teaching Strategy | Assessment Methods | Content | Learning Outcomes | Mission Needs | Student Needs |

4. Formulating LO's

LOs should contain three parts[8] that deal with:

1. **Behaviour:** an **action (measurable) verb** to describe what participants will be able to do as a consequence of a learning activity.

2. **Condition:** an **environment or situation in which the student will perform the behaviour** or the tools/information they will be given when they demonstrate their learning.

3. **Criterion:** describing the limits or range of an **acceptable performance**, i.e. addressing the question of 'how well the learner has to perform for one to be able to say that the LO has been achieved?'

4. Formulating LO's

A Comparison of Poorly and Well Stated Outcomes

1. Students will understand Erikson's developmental stages.

2. Students will be familiar with the major sociological perspectives and how they relate to their daily lives.

3. Students will know the skills necessary for conducting research in the natural sciences.

1. Students will summarize each of Erikson's stages of development.

2. Students will describe each of the major sociological perspectives and how each perspective relates to events in their daily lives.

3. Students will design a research project using appropriate scientific theory and methodology.

4. Formulating LO's

Example of LO

At the end of this program Nursing students should be able to:
Use gloves all the time when nursing patients

Example of KPI

% of nursing students that uses gloves when nursing patients

- Measurable verb
- Condition (under which the performance occur)
- Criterion of acceptable performance

4. Formulating LO's

- Verb to indicate what the learner is expected to be able to do by the end of the course (Use gloves).

- Word the indicate on what or with what the learner is acting or the skill performed (Patients).

- Word indicate the nature of the performance required (evidence that the learning is achieved/criterion) (All the time).

Outcomes (results)	Methods (activities)	Measures (data collection)	Criterion (standard of performance)
At the end of this course students will be able to...	To meet this outcome, students will...	To evaluate this outcome, faculty will...	As a sign of success, the target will be...

EXAMPLE

Outcomes (results)	Methods (activities)	Measures (data collection)	Criterion (standard of performance)
Speak in an engaging, logical, and well-clear way	give an oral presentation on a relevant topic of their choice	grade the presentation using a point rubric that measures : 1. Accuracy of language, 2. Use of eye contact 3. Effectiveness of answering questions	80% of students will achieve at least an average of a 2 (KPI)

- KPI is a measure that provides information on the extent of progress toward the goal and allows comparison

4. Formulating LO's

Examples of LO's in the 5 learning domains:

- Knowledge: List the surgical approaches in treatment of oral disease.

- Cognitive: Analyze computer systems security vulnerabilities using appropriate resources.

- Interpersonal & responsibility: Collaborate with a multidisciplinary team to provide the best patient care for a stroke patient.

- Comm. & IT: Make an effective presentation.

- Psychomotor: Testing reflex and muscle.

Checklist for LO:

Expected learning outcome: The student will write learning outcomes that have a measurable action verb at the highest appropriate level given a "verb-level" list.

Criteria for success: All questions must be answered "Yes".

Yes	No	Writing Learning Outcomes
☐	☐	Does each outcome include an action verb?
☐	☐	Is only one action verb used in each outcome?
☐	☐	Is each outcome measurable?
☐	☐	Is each outcome written in terms of what the learner does, not what the instructor does?
☐	☐	Is each outcome clear from the learner's perspective?

What else?

By the end of this program, successful students will:

	Learning Outcome	**Analysis**
Option 1: Not an outcome	Be given opportunities to learn effective communication skills	Describes program content, not the attributes of successful students
Option 2: Vague	Have a deeper appreciation for good communication practices	Does not start with an action verb or define the level of learning; subject of learning has no context and is not specific
Option 3: Less vague	Understand principles of effective communication	Starts with an action verb, but does not define the level of learning; subject of learning is still too vague for assessment
Option 4: Specific	Communicate effectively in a professional environment through technical reports and presentations	Starts with an action verb that defines the level of learning; provides context to ensure the outcome is specific and measurable

Use the Self-Assessment of Learning Outcome Statements charts (Appendix 2 in the Guide to Writing and Assessing Learning Outcomes) to evaluate these examples.

Common mistakes regarding LOs:
Confusing learning outcomes/ not clear
Outcome statement cannot be measured
Not using the proper verbs for each Learning Outcome
Using more than one verb for one learning outcome
Grammar mistakes
Most of the LOs were in the knowledge domain
Too many Learning outcomes
Writing a lot of details in the CLO
Placing high cognitive skills in other domains

Part 2: Formulating Learning Outcomes

1. What are Learning Outcomes (LO)?

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Part 3: Constructive Alignment

1. LOs

2. With assessment Methods

3. With teaching strategies

Learning Outcomes

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

Constructive Alignment

Creating learning experience for learners is the center of OBE. In other words, students should be placed first in our design of the learning outcomes, assessment task and teaching and learning activities.

Teaching Strategies

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

Assessment Methods

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

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge		
1.1			
1.2			
...			
2.0	Skills		
2.1			
2.2			
...			
3.0	Competence		
3.1			
3.2			
...			

Examples of Assessment **Methods**

- Papers or projects

- In-class activities

- Quizzes

- OSCE/OSPE

- MCQ

- Problem class discussions

- Homework assignments that require (oral or written)

- Summarizing readings, films, speeches, etc.

- Students portfolio's

- Graded class discussions

- Written exam questions

3. Teaching strategies

- As you prepare your teaching strategies, assignments, homework, or other activities, be sure to keep the student Learning Outcomes in mind.

- Be intentional in delivering material that leads to the desired outcomes.

- Create new assignments to produce LO's as needed.

Knowledge	Interpersonal Cognitive Skills	Interpersonal Cognitive Skills	Interpersonal Cognitive Skills	Interpersonal Cognitive Skills	Communication Interpersonal Cognitive Skills
Disseminate up-to-date knowledge	Develop the capability to use ideas and information	Develop the student's ability to test ideas and evidence	Develop the student's ability to generate ideas and evidence	Facilitate the personal development of students	Develop the capacity of students to plan and manage own learning
1. Lectures 2. Up-to-date textbooks 3. Reading lists 4. Hand-outs 5. "Guest" lectures 6. Use of exercises that require students to find up-to-date knowledge 7. Develop skills in using library and other learning resources 8. Directed private study 9. Open learning materials 10. Use of the Internet	1. Case studies 2. Practicals 3. Work experience 4. Projects 5. Demonstrations 6. Group working 7. Simulations (e.g. computer based) 8. Problem-solving 9. Discussion and debate 10. Essay-writing	1. Seminar and tutorials 2. Supervision 3. Presentations 4. Essays 5. Feedback on written work 6. Literature reviewing 7. Exam papers 8. Critical assessment 9. Peer assessment 10. Self-assessment	1. Research Projects 2. Workshops on techniques of creative problem solving 3. Group working 4. Action learning 5. Lateral thinking 6. Brainstorming 7. Mind-mapping 8. Creative visualization 9. Use of relaxation techniques 10. Problem solving	1. Feedback 2. Action learning 3. Learning contracts 4. Role play 5. Experiential learning 6. Learning logs 7. Structured experiences in groups 8. Reflective documents 9. Self-assessment 10. Profiling	1. Learning contracts 2. Projects 3. Action Learning 4. Workshops 5. Mentors 6. Reflective logs and diaries 7. Independent study 8. Dissertations 9. Work placement 10. Portfolio development

Teaching Strategies that can be used

- Substitute lectures with active learning projects
- Tie topics together continually
- Assign open-ended questions and problems
- Use simulations, role-playing
- Use cooperative (team based) learning
- Pre-class assignments
- Encourage critical thinking
- Create opportunities for reflection
- Hold students responsible for material not yet covered

Summary

- Alignment !!!!

- Accommodate all learning styles, so mix it up!

- Use student-centered approaches

- Use technology effectively

- Consider team work, peer-to-peer exchange

- Stay connected with your students