Session 1

LEARNING OUTCOMES IN MEDICAL EDUCATION

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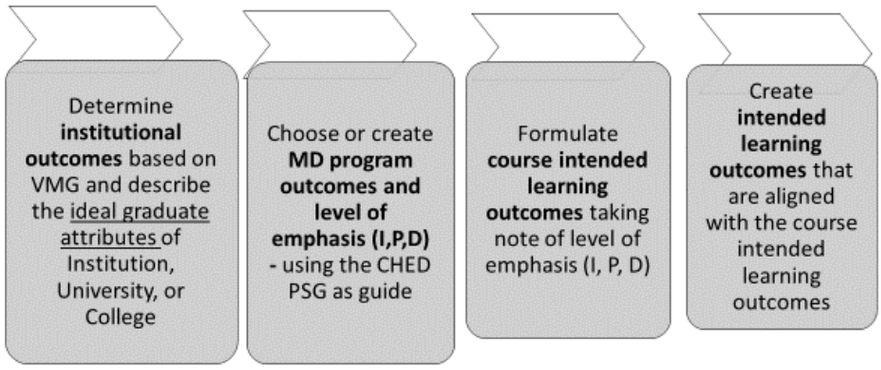
STEPS IN CREATING A MEDICAL CURRICULUM



MACROCURRICULUM

Institutional outcomes - Institution's vision, mission and goals
Program outcomes
Course outcomes

MICROCURRICULUM

Instructional design with intended learning outcomes

LEARNING OUTCOMES DEFINED

- are broad statements of what is achieved and assessed at the end of a course of study. *(RM Harden)*
- What students should know, do and value at the end of their educational program. - Supports a "learner-centered" approach to the instructional activity. - When students know what is expected of them they tend to focus their studying time and energy better, thus improving learning. *(Lindhom, JA.)*
- Learning outcomes determine curriculum content, teaching methods and assessments. *(JM Shumway, RMHarden)*

INSTITUTIONAL OUTCOMES

- Includes description of an institution's attributes of its ideal graduate based on its Vision-Mission
- "a <institution> graduate is expected to be .."

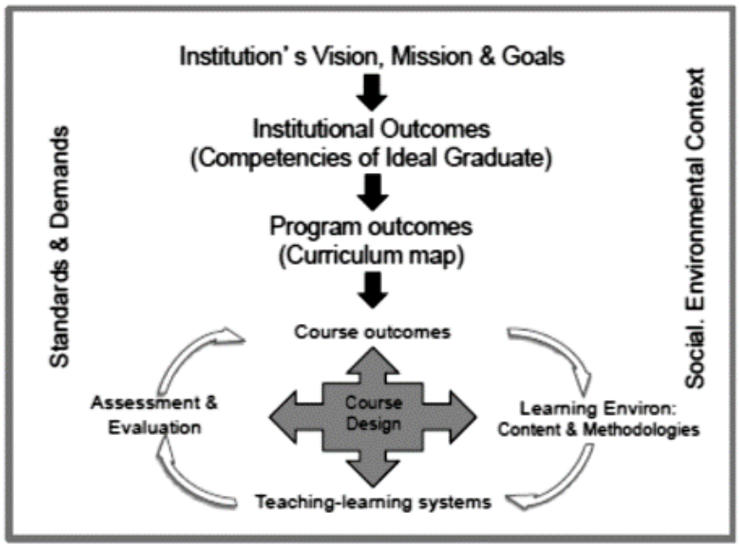
PROGRAM OUTCOMES

- Sets of competencies that all learners are expected to demonstrate at the time of graduation.
- "When you successfully complete a M.D. degree, you will be able to:"

COURSE OUTCOMES

- Refers to the K, S, A that all learners are expected to demonstrate at the end of the course.
- "When you successfully complete <Course>, you will be able to:"

FRAMEWORK FOR OUTCOME-BASED EDUCATION



CHED Implementation Handbook for OBE and ISA CHED TFOTQA 2013

Program Outcomes Specific to the Doctor of Medicine program:

Program Outcomes	Operational Definition of Program Outcomes
1. Demonstrate clinical competence	Competently manage clinical conditions of all patients in various settings
2. Communicate effectively	Convey information, in written and oral formats, across all types of audiences, venues and media in a manner that can be easily understood
3. Lead and manage health care teams	Initiate planning, organizing, implementation and evaluation of programs and health facilities. Provide clear direction, inspiration and motivation to the healthcare team/community
4. Engage in research activities	Utilize current research evidence in decision making as practitioner, educator or researcher. Participate in research activities.
5. Collaborate within interprofessional teams	Effectively work in teams in managing patients, institutions, projects and similar situations
6. Utilize systems-based approach to healthcare	Utilize systems-based approach in actual delivery of care Network with relevant partners in solving general health problems
7. Engage in continuing personal and professional development	Update oneself through a variety of avenues for personal and professional growth to ensure quality healthcare and patient safety
8. Adhere to ethical, professional, and legal standards	Adhere to national and international codes of conduct and legal standards that govern the profession
9. Demonstrate nationalism, internationalism and dedication to service	Demonstrate love for one's national heritage, respect for other cultures and commitment to service
10. Practice the principles of social accountability	Adhere to the principles of relevance, equity, quality and cost effectiveness in the delivery of healthcare to patients, families and communities

Policies, Standards and Guidelines for the Doctor of Medicine Program CMO no.18 s.2016 , p. 4

Sample Program Outcomes and Curricular Goals

PROGRAM OUTCOMES	SAMPLE CURRICULAR GOALS
When you successfully complete a M.D. degree, you will be able to:	When you successfully complete <COURSE>, you will be able to:
1. Competently manage clinical conditions of clients in various settings	1. Correlate the clinical presentation with mechanism of illness 2. Select the most appropriate diagnostic plan 3. Formulate the most appropriate plan of management (pharmacologic & non-pharmacologic) 4. Anticipate possible complications (disease-related and treatment-related) 5. Educate patient and family regarding disease prognosis, management 6. Formulate health and wellness plan for patient and families
2. Convey information, in written and oral formats, across all types of audiences, venues and media in a manner that can be easily understood	1. Utilize available forms of communication 2. Make use of information technology efficiently 3. Practice effective and clear communication amongst learners, teachers and clients
3. A. Initiate planning, organizing, implementation, and evaluation of programs and health facilities, B.Provide clear direction, inspiration, and motivation to the healthcare team/community	1. Assume leadership role in any health care team he is situated 2. Implement healthcare programs as planned 3. Monitor process and outcomes of health programs
4. A.Utilize current research evidence in decision making as practitioner, educator or researcher, B. Participate in research activities	1. Critically appraise relevant literature 2. Create a research proposal using information from critically appraised literature 3. Correlate research findings with mechanisms of disease and management of illness
5. .Effectively work in teams with co-physicians and other professionals in managing clients, institutions, projects, and similar situations	1. Demonstrate the attributes of collaboration with co-learners 2. Identify the relevant agencies in the health profession
6. A. Utilize systems-based approach in actual delivery of care B. Network with relevant partners in solving general health problem	1. Formulate an inventory of health care issues in the community diagnosis 2. Identify the relevant health care agencies that exist in the community
7. Update oneself through a variety of avenues for personal and professional growth to ensure quality healthcare and patient safety.	1. Exhibit the attribute of a motivated, self-directed learner 2. Demonstrate the attributes of integrity, compassion, gender sensitivity, resourcefulness in the dealings with co-learners, academic and non-academic staff 3. Perform transferrable skills under supervision
8. Adhere to national and international codes of conduct and legal standards that govern the profession.	1. Demonstrate professionalism with co-learners, academic, non-academic staff and clients 2. Apply ethical and legal standards on hypothetical cases

PROGRAM OUTCOMES	SAMPLE CURRICULAR GOALS
When you successfully complete a M.D. degree, you will be able to:	When you successfully complete <COURSE>, you will be able to:
	3. Explain the Oath of Professionals and Hippocratic Oath
9. Demonstrate love for one's national heritage, respect for other cultures and commitment to service.	1. Demonstrate the attributes of responsible citizenship, and cultural competence in dealing with co-learners, academic, non-academic staff and clients 2. Exhibit cultural sensitivity in dealing with co-learners, academic, non-academic staff and clients 3. Manifest the attribute of dedication to service
10. Adhere to the principles of relevance, equity, quality, and cost effectiveness in the delivery of healthcare to patients, families, and communities	1. Use evidence-based data and appropriate technology in the delivery of comprehensive health care within socio-cultural context 2. Formulate plan to make optimum health care available to all 3. Recommend solutions to the most important health issues and disease problems

Modified from ANNEX 2B. Policies, Standards and Guidelines for the Doctor of Medicine Program CMO no.18 s.2016.

CURRICULUM MAP

The curriculum map contains the program outcomes and the different courses per year level according to the degree of breadth and depth that these courses contribute to achieving the program outcomes.

The courses are categorized according to how program outcomes are covered in the course:

- **I – introduced** (program outcomes are merely introduced in the course)
- **P – practiced** (program outcomes are not just introduced but practiced in the course), and
- **D– demonstrated** *(program outcomes are practiced, demonstrated and assessed in the course)*

Identified CHED Program Outcomes are indicated by the corresponding numbers as shown below:

1. Demonstrate clinical competence
2. Communicate effectively
3. Lead and manage health care teams
4. Engage in research activities
5. Collaborate within interprofessional teams
6. Utilize systems-based approach to healthcare
7. Engage in continuing personal and professional development
8. Adhere to ethical, professional and legal standards.
9. Demonstrate nationalism, internationalism and dedication to service
10. Practice the principles of social accountability

Sample Curricular Map for the Basic Sciences ^

Group of courses	Year I	Year II	Year III
1. Anatomy & Histology	1P, 2P, 3I, 4I, 5I, 7P, 8P		
2. Physiology	1P, 2P, 3I, 4P, 5I, 7P, 8P		
3. Biochemistry	1P, 2P, 3I, 4P, 5I, 7P, 8P, 9P		
4. Microbiology & Parasitology		1P, 2P, 3P, 4P, 5I, 7P, 8P, 10I	
5. Pathology		1P, 2P, 3P, 4P, 5I, 7P, 8P	1D, 2P, 3P, 4P, 5P, 7P, 8P
6. Pharmacology		1D, 2P, 3P, 4P, 5I, 6I, 7P, 8P, 9P, 10I	
7. Legal Medicine & Jurisprudence			1D, 2D, 3P, 4P, 5I, 6P, 7D, 8D, 9P, 10P

Sample Curricular Map for the Clinical Sciences ^

Groups of courses	Year I	Year II	Year III	Year IV
1. Medicine		1P, 3P, 2P, 4P, 5P, 6I, 7P, 8P, 9P, 10P	1D, 2D, 3P, 4D, 5D, 6P, 7D, 8D, 9P, 10P	1D, 2D, 3P, 4D, 5D, 6P, 7D, 8D, 9D, 10D
2. Pediatrics		1P, 3P, 2P, 4, 5P, 6I, 7P, 8P, 9P , 10P	1D, 3P, 2D, 4D, 5D, 6P, 7D, 8D, 9P, 10P	1D, 2D, 3P, 4D, 5D, 6P, 7D, 8D, 9D, 10D
3. Obstetrics-Gynecology		1P, 2P, 3P, 4P, 5, 6I, 7P, 78, 9P, 10P	1D, 2D, 3P, 4D, 5D, 6P, 7D, 8D, 9P, 10P	1D, 2D, 3P, 4D, 5D, 6P, 7D, 8D, 9D, 10D
4. Surgery: Ophthalmology, ENT, Anesthesiology, Orthopedics		1P, 2P, 3P, 4P, 5P, 6I, 7P, 8P, 9P, 10P	1D, 2D, 3P, 4D, 5D, 6P, 7D, 8D, 9P, 10P	1D, 2D, 3P, 4D, 5D, 6P, 7D, 8D, 9D, 10D
5. Preventive Medicine & Public Health	1P, 2P, 3I, 4P, 5I, 6I, 7P, 8P, 9I, 10I	1P, 2P, 3P, 4D, 5D, 6P, 7P, 8P, 9P, 10P	1D, 2D, 3P, 4D 5D, 6P, 7P, 8D, 9P, 10P	1D, 2D, 3D, 4D, 5D, 6D, 7D, 8D, 9D, 10D

Sample Curricular Map for Other Courses ^

Groups of courses	Year I	Year II	Year III	Year IV
1. Neuroscience*	1P, 2P, 3I, 4I, 5I, 7P, 8P	1P, 2P, 3P, 4P, 5P, 6I, 7P, 8P, 9P, 10P	1D, 2D, 3P, 4D, 5D, 6P, 7D, 8D, 9P, 10P	1D, 2D, 3P, 4D, 5D, 6P, 7D, 8D, 9D, 10D
2. Psychiatry*		1P, 2P, 3P, 4P, 5P, 6I, 7P, 8P, 9P, 10P	1D, 2D, 3P, 4D, 5D, 6P, 7D, 8D, 9P, 10P	1D, 2D, 3P, 4D, 5D, 6P, 7D, 8D, 9D, 10D
3. Leadership & Management, Health Policy & Health Laws*	2P, 3I, 4I, 5I, 6I, 7P, 8P, 9I, 10I	2P, 3P, 4I, 5I, 6I, 7P, 8P, 9I, 10P	2P, 3P, 4I, 5I, 6I, 7P, 8P, 9P, 10P	2D, 3D, 4D, 5D, 6D, 7D, 8D, 9D, 10D
4. Geriatrics		1P, 2P, 3P, 4P,	1D, 2D, 3P,	1D, 2D, 4D,

Groups of courses	Year I	Year II	Year III	Year IV
		5P, 6I, 7P, 8P, 9P, 10P	4D, 5D, 6P, 7D, 8D, 9P, 10P	5D, 6P, 7D, 8D, 9D, 10D
5. Patient Safety*	1P, 2P, 3I, 4P, 5I, 6I, 7P, 8P, 9I, 10I	1P, 2P, 3P, 4D, 5D, 6P, 7P, 8P, 9P, 10P	1D, 2D, 34 5D, 6P,7P, 8D, 9D, 10P	1D, 2D, 4D, 5D, 6D, 7D, 8D, 9D, 10D
6. Disaster Risk Reduction and Management*	1P, 3I, 2P, 4P, 5I, 6I, 7P, 8P, 9I, 10I	1P, 2P, 3P, 4D, D, 6P, 7P, 8P, 9P, 10P	1D, 2D, 3P, 4D 5D, 6P,7P, 8D, 9D, 10P	1D, 2D, 3P, 4D, 5D, 6D, 7D, 8D, 9D, 10D
7. Interprofessional education*	3I, 5I, 10I	5P, 10P	5P, 10P	5D, 10D

* To be integrated into other subjects as appropriate

^ANNEX 3. Policies, Standards and Guidelines for the Doctor of Medicine Program CMO no.18 s.2016.

Sample Learning Outcomes that Can Be Derived from Identified Program Outcomes

PROGRAM OUTCOMES	LEARNING OUTCOMES
Competently manage clinical conditions of clients in various settings	Given a clinical situation in any setting/workplace, the medical graduate should be able to: 1. Establish effective rapport 4. Obtain accurate history 5. Perform thorough physical examination 6. Formulate appropriate diagnostic plan including a list of differential diagnosis and established clinical diagnosis 7. Develop a client-centered management plan 8. Maintain an accurate and complete medical record 9. Refer cases appropriately
Convey information, in written and oral formats, across all types of audiences, venues and media in a manner that can be easily understood	Given various settings and purposes, the medical graduate should be able to: 1. Listen actively to process information 2. Explain clearly relevant information to client and family 3. Secure client's cooperation and consent 4. Communicate effectively with other health professionals and stakeholders 5. Utilize information technology efficiently 6. Convey messages effectively using various forms of communication
Initiate planning, organizing, implementation and evaluation of programs and health facilities. Provide clear direction, inspiration and motivation to the healthcare team/community	Given a program to manage or a health team to lead, the medical graduate should be able to: 1. Initiate planning, organizing, implementation and evaluation of programs and health facilities 2. Provide clear direction, inspiration and motivation to the healthcare team
Utilize current research evidence in decision making as practitioner, educator or researcher. Participate in research	Given different data and information, the medical graduate should be able to: 1. Critically appraise relevant literature 2. Apply research findings into practice appropriately Given a clinical dilemma, the medical graduate should be

PROGRAM OUTCOMES	LEARNING OUTCOMES
activities.	able to: 1. Formulate sound, relevant and viable research questions 2. Consider an appropriate research design 3. Gather data systematically 4. Apply appropriate statistical analysis 5. Write a cohesive research paper 6. Disseminate research outputs
Effectively work in teams in managing patients, institutions, projects and similar situations	Given different scenarios, the medical graduate should be able to: Collaborate appropriately with other healthcare providers and other health professional groups
Utilize systems-based approach in actual delivery of care Network with relevant partners in solving general health problems	Given a clinical situation in any setting/workplace, the medic graduate should be able to: 1. Relate social determinants to heath and illness 2. Utilize each component of the health system for optimum care 3. Advocate for partnership with related government and non-government agencies
Update oneself through a variety of avenues for personal and professional growth to ensure quality healthcare and patient safety	Given different scenarios in any workplace, the medical graduate should be able to: 1. Pursue lifelong learning and personal growth 2. Acquire transferrable skills 3. Demonstrate integrity, compassion, gender sensitivity and resourcefulness
Adhere to national and international codes of conduct and legal standards that govern the profession	1. Demonstrate professionalism 2. Comply with ethical and legal standards 3. Adhere to the Oath of Professional and the Hippocratic oath
Demonstrate love for one's national heritage, respect for other cultures and commitment to service	Given different scenarios in any setting/workplace, the medical graduate should be able to: 1. Demonstrate responsible citizenship 2. Exhibit cultural competence 3. Serve with dedication
Adhere to the principles of relevance, equity, quality and cost effectiveness in the delivery of healthcare to patients, families and communities	Given different scenarios in any setting/workplace, the medical graduate should be able to: 1. Address the health needs of the patients, family and community providing health promotion, disease prevention, cure and rehabilitation 2. Utilize clinical practice guidelines, quality assurance methods to provide high quality care 3. Deliver quality care to all patients regardless of socio-economic status, political affiliations, religious belief, ethnicity and gender 4. Utilize appropriate resources in the application of evidence-based data.

Modified from Annex 2A. Policies, Standards and Guidelines for the Doctor of Medicine Program CMO no.18 s.2016.

PARTS OF A COURSE SYLLABUS:

A. Course information
    a. Course code; credits; course supervisor; course faculty; time schedule; contact numbers
    b. Course description – Rationale, Focus, Outcome
B. Course intended learning outcome – aligned with CHED program and level of emphasis (refer to Curricular map)
C. Instructional design – module/topic description, intended learning outcome, content, teaching-learning activities, assessment
D. Contents
E. Course Resources
F. Student Assessment
G. Course Policies (Rules & Regulations)

GUIDELINES IN FORMULATING LEARNING OUTCOMES

1. Derive learning outcomes from KSA (task analysis) defined in the professional responsibilities that are within the purpose and scope of subject or unit – Revised Bloom's taxonomy of learning objectives

2. Follow the ABCD format:

A-Audience: The who. "The student will be able to…"
B-Behavior: What a learner is expected to be able to do or the product or result of the doing. The behavior or product should be observable.
C-Condition: The important conditions under which the performance is to occur.
D-Degree: The criterion of acceptable performance. How well the learner must perform in order for the performance to be considered acceptable.

Example of Learning Outcome:

(CONDITION) (AUDIENCE)
Given a paper case of a child with acute bronchial asthma, the third year student is expected to apply the management and prevention plans based on the 2016 Global Initiative for Asthma.
(BEHAVIOR) (CONDITION)

3. Use only one learning outcome at a time.

4. Avoid non-functional verbs because they cannot be measured or are redundant. They are ambiguous and do not allow teachers to know if learning has taken place.

Non-functional verbs:

able to	experience	grasp significance
acknowledge	knows/has knowledge	will be able to
appreciate	learn	
aware of	memorize	
believe	show interest in	
capable of	understand	
comprehend	familiar with	
conscious of	think	
enjoy	remember	

DOMAINS OF LEARNING:

1. Cognitive – Knowledge – Revised Bloom's taxonomy
2. Psychomotor - Skills
3. Affective – Attitude

REVISED BLOOM'S TAXONOMY

Bloom's Taxonomy – Revised
Cognitive Domain

Bloom's Taxonomy has been revised by Anderson and Krathwohl (2001) with new terms and emphasis. This adapted Bloom's model has *Knowledge* converted to *Remember* and the highest level of development is *Creating* rather than *Evaluate*.

Category	Generic Skills	Sample Verbs
Remembering **Recalling information**	The learner is able to recall, restate and remember learned information.	Choose, Cite, Enumerate, Group, Label, List, Listen, Locate, Match, Memorize, Name, Outline, Quote, Read, Recall, Recite, Record, Relate, Repeat, Reproduce, Review, Select, Show, Sort, State, Underline, Write
Understanding **Explaining ideas or concepts**	The learner grasps the meaning of information by interpreting and translating what has been learned.	Account for, Annotate, Associate, Classify, Convert, Define, Describe, Discuss, Estimate, Explain, Express, Identify, Indicate, Interpret, Observe, Outline, Recognize, Reorganize, Report, Research, Restate, Retell, Review, Translate
Applying **Using information in another familiar situation**	The learner makes use of information in a new situation from the one in which it was learned.	Adapt, Apply, Calculate, Change, Collect, Compute, Construct, Demonstrate, Dramatize, Draw, Exhibit, Generalize, Illustrate, Interpret, Interview, Make, Manipulate, Operate, Paint, Practice, Sequence, Show, Sketch, Solve, Translate
Analyzing **(Critical Thinking)** **Breaking information into parts to explore understandings and relationships**	The learner breaks learned information into its parts to best understand that information in an attempt to identify evidence for a conclusion.	Analyze, Appraise, Arrange, Calculate, Categorize, Compare, Contrast, Criticize, Debate, Detect, Diagram, Discriminate, Dissect, Distinguish, Examine, Experiment, Group, Infer, Inquire, Inspect, Investigate, Order, Probe, Question, Relate, Research, Scrutinize, Separate, Sequence, Sift, Subdivide, Summarize, Survey, Test
Evaluating **(Critical Thinking)** **Justifying a decision or course of action**	The learner makes decisions based on in-depth reflection, criticism and assessment.	Appraise, Argue, Assess, Choose, Compare, Conclude, Criticize, Critique, Debate, Decide, Deduce, Defend, Determine, Differentiate, Discriminate, Evaluate, Infer, Judge, Justify, Measure, Predict, Prioritize, Probe, Rank, Rate, Recommend, Revise, Score, Select, Validate, Value
Creating **(Critical Thinking)** **Generating new ideas, products, or ways of viewing things**	The learner creates new ideas and information using what has been previously learned.	Act, Assemble, Blend, Combine, Compile, Compose, Concoct, Construct, Create, Design, Develop, Devise, Formulate, Forecast, Generate, Hypothesize, Imagine, Invent, Organize, Originate, Predict, Plan, Prepare, Propose, Produce, Set up

Order of Thinking Skills	Corresponding Bloom's Taxonomy
Lower order of thinking skills (**LOTS**)	Remember Understand Apply
Higher order of thinking skills (**HOTS**)	Analyze Evaluate Create

PSYCHOMOTOR DOMAIN: E. Simpson

level	category or 'level'	description	examples of activity or demonstration and evidence to be measured	'key words' (verbs which describe the activity to be trained or measured at each level)
1	**Perception**	awareness	use and/or selection of senses to absorb data for guiding movement	recognise, distinguish, notice, touch , hear, feel, etc
2	**Set**	readiness	mental, physical or emotional preparation before experience or task	arrange, prepare, get set
3	**Guided Response**	attempt	imitate or follow instruction, trial and error	imitate, copy, follow, try
4	**Mechanism**	basic proficiency	competently respond to stimulus for action	make, perform, shape, complete
5	**Complex Overt Response**	expert proficiency	execute a complex process with expertise	coordinate, fix, demonstrate
6	**Adaptation**	adaptable proficiency	alter response to reliably meet varying challenges	adjust, integrate, solve
7	**Origination**	creative proficiency	develop and execute new integrated responses and activities	design, formulate, modify, re-design, trouble-shoot

AFFECTIVE DOMAIN: Krathwohl

RECEIVE	**RESPOND**	**VALUE**	**ORGANIZE**	**INTERNALIZE**
Acknowledge				act
ask	Aid			apply
attend	answer	Accept		arrive
develop	assist	argue		change
identify	cite	challenge	adhere	characterize
listen	clarify	confront	alter	influence
locate	complete	criticize	arrange	internalize
name	comply	debate	build	perform
observe	conform	defend	choose	plan
realize	contribute	demonstrate	codify	practice
recognize	cooperate	differentiate	combine	propose
	describe	enable	compare	qualify
	discuss	explain	contrast	ready
	do	follow	crystalize	relay
	engage	grow	discriminate	revise
	examine	initiate	display	serve
	exhibit	invite	elaborate	solve
	help	join	formulate	view
	interpret	justify	generalize	verify
	participate	persuade	integrate	
	perform	prefer	judge	
	present	pursue	modify	
	question	refute	prepare	
	react	seek	prioritize	
	read	select	order	
	reply	study	organize	
	report	work	reconcile	
	respond		regulate	
	review		relate	
	select		systematize	
	tell		synthesize	
	volunteer		transform	
	write		weigh	

HOW TO ORGANIZE CONTENT:

1. By scope

2. By sequence
   - simple to complex
   - prerequisite learning
   - whole to part
   - chronological
   - steps in a process

EXAMPLES OF TEACHING-LEARNING ACTIVITIES:

Lectures
Small-group teaching
Problem-based or case-based learning
Role-playing
Laboratory exercises
Bedside teaching
Clinical demonstrations
Clinical skills laboratory training
Field exercises in the community
Web-based instruction

SAMPLES OF INSTRUCTIONAL RESOURCES

- Textbooks
- Curriculum guide
- Workbooks
- Journals and other publications
- AV media resources
- Models and mannequins
- Web-based instructions

CONSTRUCTIVE ALIGNMENT

- "alignment" refers to the situation when teaching and learning activities, and assessment tasks, are aligned to the intended learning outcomes.
- the teaching-learning activities and the assessment tasks must activate the same verbs as in the intended learning outcomes.

Typical Intended Learning Outcomes →	Possible Teaching-Learning Activities →	Possible Assessment Tasks
Describe	Reading/lecture followed by presentation	Essay question, examination, oral presentation (peer assessment)
Explain	Tutorial, written essay, peer assessment	Assignment, essay question, examination, oral
Integrate	Project, assignment	Project assignment
Apply learning	Project, case study, work-based learning	Project, case study, experiment
Solve problems	Problem-based, case study	Case study, project, experiment
Design, create	Project, creative writing	Project
Hypothesize	Experiment, project	Experiment, project
Reflect	Reflective diary	Reflective diary, portfolio, self-assessment

Excerpt from Allan de Guzman. UST Outcomes-based Education Across the Disciplines. A Seminar Writeshop. December, 2014.

REFERENCES:

Biggs J, Tang C. Using Constructive Alignment in Outcomes-based teaching and Learning. In *Teaching for Quality Learning*. 3rd ed. McGraw-Hills Companies Inc.; 2007: 50-63.

Chan RD. Translating Outcome-Based Education Curriculum Plan to Course Design. JAPMC 1(1): 9-16.

Commission on Higher Education. Handbook on Typology, Outcomes-based Education, and Institutional Sustainability Assessment. Quezon City: *Office of Institutional Quality Assurance and Governance*; 2014:8-88.

Commission on Higher Education. CMO 18 series 2016. POLICIES, STANDARDS AND GUIDELINES FOR THE DOCTOR OF MEDICINE (M.D.) PROGRAM. Available at http://www.ched.

gov.ph/wp-content/uploads/2016/04/CMO-No.-18-Series-of-2016-Policies-Standards-and-Guidelines-for-Doctor-of-Medicine-M.D.-Program.pdf accessed August 14, 2016.

Harden RM (2002). Developments in outcome-based education. Medical Teacher 24(2):117-120.

Harden RM, Crosby JR & Davis MH (1999). An introduction to outcome-based education. Medical Teacher 21(1):7-14.

Leus, MJ. University of Santo Tomas The Graduate School. An Outcomes-Based Learning Program. 2014-2015

Revised Bloom's Taxonomy Available at: http://www.lbcc.edu/oas/documents/bloom_s-rev_3-09.pdf. Accessed August 14, 2016.

Sana EA (ed.). 2010. Teaching and Learning in the Health Sciences.

Shumway JM, Harden RM (2003). The assessment of learning outcomes for the competent and reflective physician. Medical Teacher 25(6):569-584.