WRITING COURSE LEARNING OUTCOMES

COURSE DESIGN CONVERSATIONS

Writing Course Learning Outcomes

Course learning outcomes (CLOs) are statements of what students should be able to demonstrate by the end of the course. Well-defined course learning outcomes provide a strong foundation for course design and fostering student engagement, accountability, and alignment with appropriate activities and assessments. (Hamidi et al., 2024; Osueke et al, 2018)

Course learning outcomes follow a general format:

Audience + **Behaviour** + **Condition** = **Course Learning Outcome**.

A = the audience, will be the people (students) accomplishing the outcome.
B = the behaviour, is what is expected of them and is directly related to Bloom's Taxonomy.
C = the condition or criteria that extends the behaviour and provides the context of learning.

Example: By the end of this course, students should be able to formulate a research hypothesis based on a critical evaluation of the current literature.

Key Concepts:

Bloom's Taxonomy: A learning theory dating back to 1956 (Bloom et al. 1956) to classify the level and depth of learning into 3 domains: cognitive, affective and psychomotor (Krathwohl, 2002). This theory is commonly used today in higher education.

Domains of learning: There are 3 main domains of learning associated with Bloom's Taxonomy to assist in constructive alignment (Krathwohl, 2002):

Cognitive: the foundational knowledge (memorizing, comprehension, application, analysis, evaluation and creating)

Affective: the attitudes, actions, values, biases and interests (receiving, responding, valuing, organization, characterization)

Psychomotor: the physical or motor skills (imitate, execute, perform, adaption, create new movements)

Transferability of learning: When writing course learning outcomes consider how the learning can be transferred to new and unique situations.

Course Learning Outcomes in Action

Course learning outcomes can help shape the learning experience through intentional verb selection and wording.

Further examples:

- Students should be able to design and create a small applet or application using object-oriented design principles.
- By the end of this course, students should be able to formulate a research hypothesis based on a critical evaluation of the current literature.
- Students should be able to summarize the historical context of development discourse from Colonialism to today.

The three main domains of learning to help structure course learning outcomes: c**ognitive, affective and psychomotor.** Use the following charts to help identify what the target learning is for course learning outcomes

Cognitive Domain

The cognitive domain (Bloom, 1956) involves knowledge and the development of intellectual abilities. This includes the recall or recognition of specific facts, procedural patterns, and concepts that serve in the development of intellectual abilities and skills.

Category	Key Verbs	Examples
Remember: Retrieve relevant knowledge from long-term memory.	tell, list, recognize, describe, recite, locate, label, identify, memorize, define, match, name, outline, recall, reproduce, select, state	Students should be able to: *Locate* different countries on the world map. *Identify* styles of architecture in urban settings, such as downtown Calgary.
Comprehend: perceive meaning and grasp mentally	explain, describe, clarify, compare, generalize, summarize, extend, paraphrase, represent, exemplify, illustrate, classify, contrast, convert, distinguish, instantiate, estimate, give examples,	Students should be able to: *Compare* different artistic painting styles. *Explain* the formation process of igneous rock.

	infer, interpret, rewrite, arrange, match, paraphrase	
Apply: Carry out or use a procedure or process theory in a given situation	solve, show, classify, use, execute, carry out, implement, choose, report, apply, compute, construct, demonstrate, manipulate, modify, operate, prepare, produce	Students should be able to: *Solve* linear equations. *Use* rhetorical strategies to make arguments in writing.
Analyze: Break material into its constituent parts and determine how the parts relate to one another and to an overall structure or purpose.	analyze, sort, contrast, investigate, separate, differentiate, break down, compare, diagram, deconstruct, illustrate, infer, outline, relate, organize, integrate, structure, calculate, modify, solve	Students should be able to: *Differentiate* between plant and dwarf plant. *Sort* a given set of plants by genus or species.
Evaluate: Make judgments based on criteria and standards	judge, select, decide, debate, justify, verify, argue, assess, prioritize, predict, appraise, conclude, critique, defend, evaluate, estimate, test	Students should be able to: *Debate* the extent to which human activities might affect climate change. *Critique* the methodology section of a research article.
Create: Put elements together; reorganize elements into a new pattern or structure.	create, invent, design, devise, formulate, hypothesize, produce, generate, plan, construct, compile, compose, organize, write	Students should be able to: *Generate* a business plan based on the clients' needs. *Produce* an Individual Program Plan (IPP) for students with a learning disability.

Affective Domain

The affective domain (Krathwohl, Bloom, & Masia, 1973) includes the way we deal with things emotionally, such as feelings, values, appreciation, enthusiasm, motivation, and attitudes.

Category	Key Verbs	Examples
Receive: Open to experience; willing to listen	ask, listen, focus, attend, take part, discuss, acknowledge, hear, read	Students should be able to: *Listen* to new information with neutrality.
Respond: React and participate actively	react, respond, seek, discuss, interpret, clarify, provide additional examples, contribute, question	Students should be able to: *Participate* actively in a group by contributing to or building on new ideas.
Value: Identify values and express personal opinions	demonstrate, differentiate, explain, justify, propose, affirm	Students should be able to: *Demonstrate* sensitivity towards individual and cultural differences.
Conceptualize Values: Reconcile internal conflicts; develop value system	Build, develop, formulate, defend, modify, relate, prioritize, reconcile, contrast, arrange, compare, propose, verify	Students should be able to: *Prioritize* emergency responses after a disaster.
Internalize Values: Adopt belief system and philosophy	act, display, influence, solve, practice, propose, revise, defend, organize	Students should be able to: *Revise* judgments and change behavior in light of new evidence.

Psychomotor Domain

The psychomotor domain (Simpson, 1972) includes physical movement, coordination, and use of motor skills.

Category	Key Verbs	Examples
Imitate: Copy action of another; observe and replicate	Copy, follow, replicate, repeat, adhere	Students should be able to: *Observe* and *copy* dance steps.

Execute: Reproduce activity from instruction or memory	Re-create, build, perform, execute, implement, follow	Students should be able to: *Follow* instructions to dissect a shark.
Perform: Execute skill reliably, independent of help	Demonstrate, complete, show, perfect, calibrate, control, measure	Students should be able to: *Fix* a leaking faucet.
Adaption: Adapt and integrate expertise to satisfy a new objective	Construct, solve, combine, coordinate, integrate, adapt, develop, formulate, modify, master, illustrate	Students should be able to: *Drive* a vehicle in various weather conditions.
Naturalize: Create new movement to fit a particular situation or specific problem.	Design, specify, manage, invent, convert, create, fix, generate, plan	Students should be able to: *Create* a new gymnastic routine.

Strategies for writing course learning outcomes

1. Be specific and use action verbs based on Bloom's Taxonomy.
2. Avoid jargon and being too wordy. Get to the point and communicate what the intended learning is.
3. Keep focused and avoid writing too many CLO's that become a list of topics. Typically, there are 5-8 outcomes in a 3-credit course.

Try this:

As you write, revise and interpret course learning outcomes talk through each outcome as if you were explaining it to a student and how it will be assessed. Then answer the question, "Is this the meaning behind the outcome?". Writing outcomes can be repetitive and through the process of alignment outcomes can be adjusted to be aligned with assessments, or vice-versa.

Further Reading:

Significant Learning Taxonomy: An alternate to Bloom's Taxonomy, the Significant Learning Taxonomy (Fink, 2003) is an integrated, non-hierarchical taxonomy that includes the human dimension.
https://www.bu.edu/sph/files/2014/03/www.deefinkandassociates.com_GuidetoCourseDesignAug05.pdf

Artificial intelligence resources:

"Bloom's Taxonomy Revisited – Artificial Intelligence Tools" by Oregon State University Ecampus is licensed under CC BY-NC 4.0

Boubker, O. (2024). From chatting to self-educating: Can AI tools boost student learning outcomes? *Expert Systems with Applications*, *238*, 121820-. https://doi.org/10.1016/j.eswa.2023.121820

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Krathwohl, D. R. (2002). A Revision of Bloom's Taxonomy: An Overview. *Theory Into Practice*, *41*(4), 212–218. https://doi.org/10.1207/s15430421tip4104_2

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Simpson, E. J. (1972). The classification of educational objectives in the psychomotor domain. Washington, D. C.: Gryphon House.