

Developing Program Learning Outcomes

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The image shows an aerial view of the UBC Okanagan Campus, featuring various buildings, a large green field, and a soccer field. The UBC logo is visible in the top right corner of the slide.

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Land Acknowledgement & Introductions

I would like to begin by acknowledging that the land on which we gather is located in the unceded territory of the Syilx Okanagan Peoples.



The image shows a group of people, including two adults and two children, standing on a rocky shore looking at a large group of ducks and a swan in a lake. The UBC logo is visible in the top right corner of the slide.

Photo of 2 adults, 2 children looking at swan and ducks from lakeshore.

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Workshop Learning Outcomes

As a result of taking part in this professional development activity, participants will be able to:

- Explain in their own words what a learning outcome is (and isn't) and ways in which they are useful at the course, program, and institutional levels.
- Describe differences between program learning outcomes (PLOs) and (CLOs) but also highlight how they should be connected.
- Engage in the development of individual PLOs through thinking about how learning can be categorized (i.e. options for learning taxonomies), demonstrated, and assessed.
- Evaluate the strengths and weaknesses of CLOs, especially in the context of their own disciplines and academic programs.



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Let's start with some definitions...

- **Mission:** Visionary statement of program purpose
- **Goals:** General targets that encompass more than learning
- **Standards:** External metrics (Ministry, accrediting body)
- **Objectives:** Learning goals associated with specific topics or activities (course-specific)
- **Attributes:** Descriptions of traits (graduates)
- **Competencies:** Ability to apply knowledge and skills
- **Outcomes:** Demonstratable & measurable knowledge, competencies, values



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From the OBJECTIVE...to the OUTCOME

Image: Woman pulling back on bow to shoot an arrow to standing target in grassy field.

Source: <https://kdvr.com/reviews/br/sports-fitness-br/recreational-sports-br/best-archery-target/>

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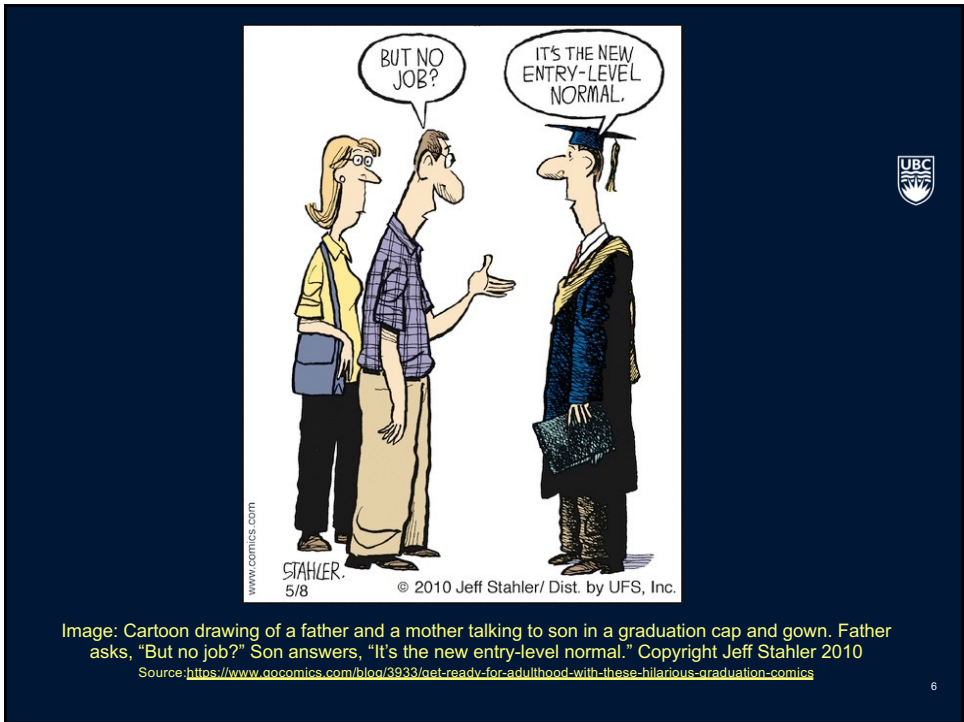


Image: Cartoon drawing of a father and a mother talking to son in a graduation cap and gown. Father asks, "But no job?" Son answers, "It's the new entry-level normal." Copyright Jeff Stahler 2010

Source: <https://www.gocomics.com/hjoo/3933/get-ready-for-adulthood-with-these-hilarious-graduation-comics>

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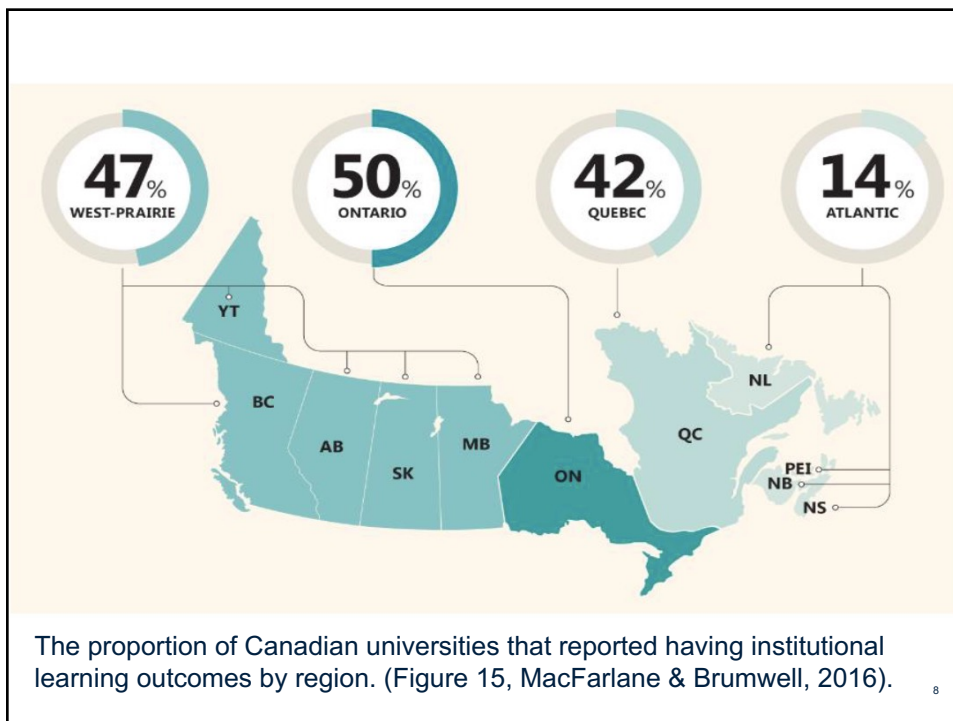
Program learning outcomes are direct statements that describe the essential and enduring disciplinary skills and abilities that students should possess upon graduating from an institution (Kenny & Desmarais, 2012).



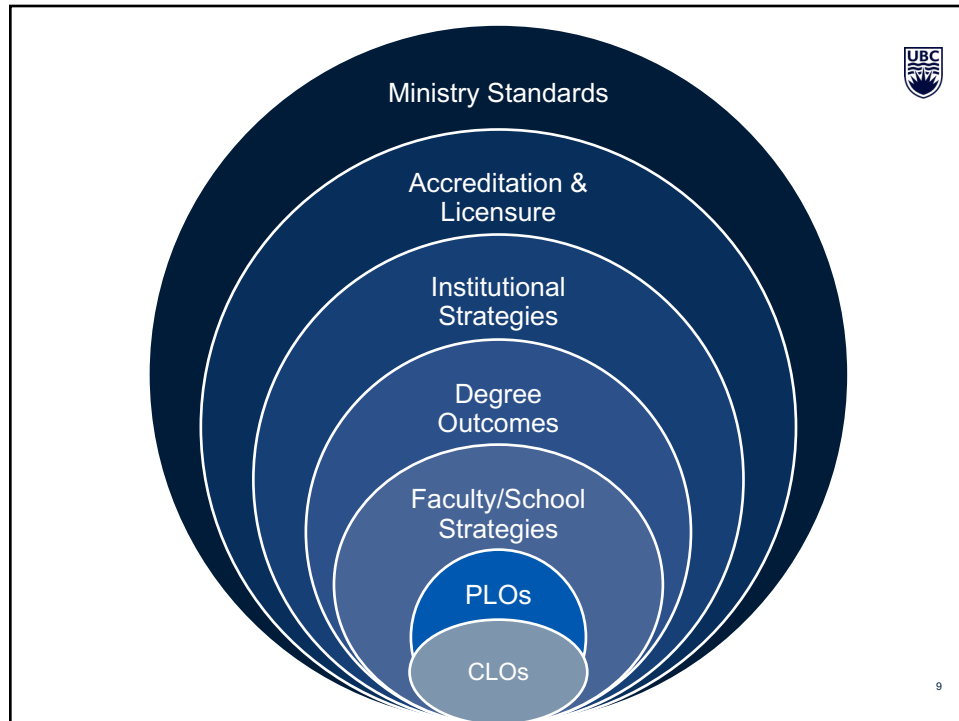
Parlez-vous PLO?

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Comparing PLOs and CLOs

After participating in the Intercultural Development **Program**, participants will:

- Demonstrate an understanding of the diverse and contextual nature of culture through their empathetic listening and critical thinking.

After participating in the Exploring Cultural Bias **Workshop**, participants will be able to:

- Counter stereotypic thinking using techniques like, perspective-taking, individuating, and stereotype replacement.

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What purposes do PLOs serve?

For Institution,
Partners,
Programs :

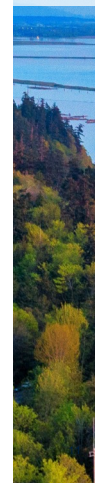
- Quality assurance
- Professional accreditation
- Curriculum (re)design
- Skills assessment
- Program review
- Credit transfer agreements

For Learners:

- Provide big picture of what they will learn & be able to do
- Connect learning to their personal & professional goals
- Market their skills more effectively to prospective employers

For Instructors:

- Provide common understanding & coordination across program
- Identify overarching areas to inform individual course content, activities, and assessments
- Reflect on how what students learn applies beyond the course/classroom



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How do we go about developing PLOs?

- Preparation Phase:
 - Determine timeline/deadline
 - Identify existing standards, strategic priorities, data collection, etc.
 - Elicit input from diverse voices
 - Invite working committee members/Plan a retreat
- Development Phase:
 - Identify needs & goals across/within concentrations
 - Determine existing/needed assessments to measure outcomes
 - Brainstorm themes/topic areas
 - Choose a taxonomy of learning and mapping scale
 - Use tips to draft PLOs
 - Use recursive process to get feedback and revise
- Implementation Phase
 - Consider program organization & student progression w/ PLOs
 - Use assessments to measure gain in expected outcomes
 - Engage instructors to align courses through CLOs
- Review & Adjustment Phase



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The criteria that characterize a measurable LO are similar to the operational definitions researchers create to design experiments and address research questions (Stanny, 2016).



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Independent Variable:
Amount of direct sunlight a plant receives

Dependent Variable:
Plant health

YOUR
DICTIONARY

Image: Two flower pots; one with health flower and other one looking dead. Independent variable: amount of direct sunlight a plant receives; Dependent variable: plant health.
Source: <https://examples.yourdictionary.com/>

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Measuring Outcomes

Outcomes Assessments Activities

Images: dog balancing ball on head-successdogs.com; stopwatch-astopwatch.com; bone-shaped dog biscuits-istockphoto.com

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Program-Level Learning Outcomes Assessment

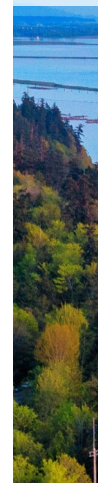
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graph TD; S1[Stage 1: Define Learning & Develop PLOs] --> S2[Stage 2: Map & Align Curriculum]; S2 --> S3[Stage 3: Gather & Analyze Assessment Results]; S3 --> S4[Stage 4: Make Program Improvements]; S4 --> S1;
```

Adapted from Goff et.al., 2015)

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Assessment Considerations

- If CLOs align with PLOs, then can use **course-embedded** assessment data & instruments.
 - Portfolios, capstone projects
 - Instructor-developed rubrics
- **Institutional** instruments can provide insight into what data are already being collected & design considerations.
- **External** agencies (licensure, accreditation) could have own standards & measures that need to be considered.
- **New programmatic** assessment tools should address gaps in data in terms of certain PLOs not being (fully) assessed) and
 - Require students to perform tasks/create products that **simulate authentically** those done in the discipline & profession
 - Reliably capture the **complexity** of learning



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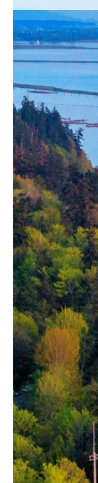
What frameworks of learning can we use?

Hierarchical:

- **Bloom's** (1956) Taxonomy of Learning: 6 orders of thinking; (Anderson & Krathwohl, 2001)
- **SOLO** (Structure of Observed Learning Outcomes) Taxonomy (Biggs & Collis, 1982): 5 levels of understanding
- The New Taxonomy of Educational Objectives (**Marzano & Kendall**, 2007): 6 levels of difficulty
- Webb's (1997) **Depth of Knowledge** (DoK) Framework: 4 levels

Non-Hierarchical:

- **ICE** (Ideas, Connections, Extensions) Model (Fostaty Young & Wilson, 2000)
- **Significant Learning** Taxonomy (Fink 2003, 2013): 6 degrees of significance
- **Heick's TeachThought Learning** Taxonomy: 6 domains related to degree of complexity
- Understanding by Design (**UbD**) (Wiggins & McTighe, 1998, 2005): 6 facets of understanding
- **Medicine Wheel** for Curriculum Design (LaFever, 2016): 4 directions



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Using Bloom's Taxonomy to write PLOs

Bloom's Taxonomy

create	Produce new or original work <i>Design, assemble, construct, conjecture, develop, formulate, author, investigate</i>
evaluate	Justify a stand or decision <i>appraise, argue, defend, judge, select, support, value, critique, weigh</i>
analyze	Draw connections among ideas <i>differentiate, organize, relate, compare, contrast, distinguish, examine, experiment, question, test</i>
apply	Use information in new situations <i>execute, implement, solve, use, demonstrate, interpret, operate, schedule, sketch</i>
understand	Explain ideas or concepts <i>classify, describe, discuss, explain, identify, locate, recognize, report, select, translate</i>
remember	Recall facts and basic concepts <i>define, duplicate, list, memorize, repeat, state</i>

Vanderbilt University Center for Teaching

Image: Diagram showing the Bloom's Taxonomy for the cognitive domain arranged as a pyramid from lower-order thinking skills to higher-order thinking skills with corresponding descriptions and verb lists to the right.

Source: <https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/>

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Using 6 Facets of Understanding to write PLOs

"UNDERSTANDING"

Interpretation of Wiggins and McTighe's "Six Facets of Understanding"

- Have Perspective:**
 - *Insightful point of view
 - *Create new theories
 - *Confront alternative viewpoints
- Have Self-Knowledge:**
 - *Know one's ignorance/prejudice
 - *Question our views
- Can Interpret:**
 - *Provide meaning
 - *Story-telling
 - *Show significance
- Can Explain:**
 - *Clearly explain how things work, what they imply, how are they connected
 - *Theories/Illustrations
- Can Apply:**
 - *Use in new contexts
 - *Performance-based
- Can Empathize:**
 - *Get inside another person's feelings
 - *Change of heart

Image: Illustration of large umbrella labeled "understanding" and Wiggins & McTighe's 6 facets with explanatory phrases listed under it like rain drops.

Source: <https://professorlad.ortiz.org/lessons-from-the-six-facets-of-understanding-and-backward-design-process/>

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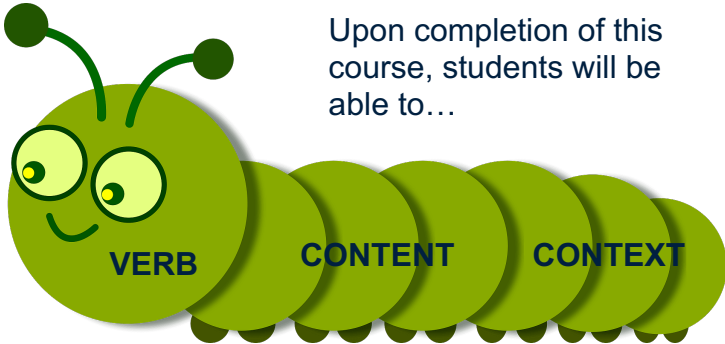
Using Fink's Taxonomy to write PLOs

Image: Diagram showing the Fink's Taxonomy of Significant Learning in the form of 6 interconnected ovals forming the shape of a flower with a circle at the center identifying "significant learning" taking place at the intersections.

Source: <https://www.vaniercollege.cc.ca/bdo/2013/02/teaching-tip-the-fink-think/>

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Anatomy of a Learning Outcome



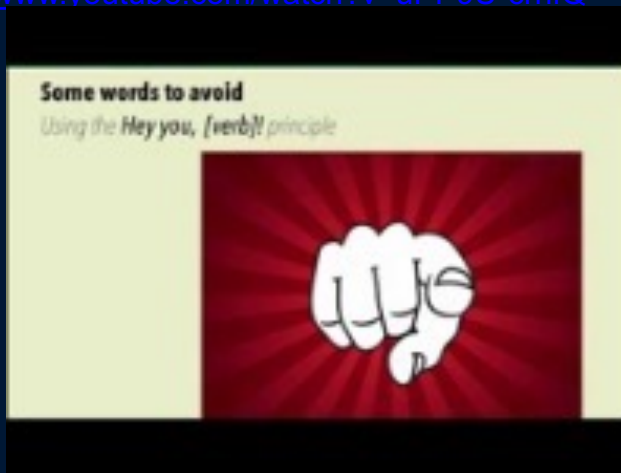
Upon completion of this course, students will be able to...

...employ both APA and MLA style guides to format written assignments, including in-text citations and the reference page.

Image: A cartoon caterpillar with a large head labeled as "verb," the first 3 sections of the body labeled "content" and the last 3 sections "context." Source: clipart.world

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University of Alberta-CTL
 Learning Outcomes, Assessment, & Bloom's Taxonomy:
 Anatomy of a Learning Outcome (2:26-5:20)
 Lower vs Higher Order Skills (6:48-8:14,9:20-9:54)
<https://www.youtube.com/watch?v=uPP9U-crnfQ>



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PLO Categories/Typologies

HEQCO Typologies:

- basic cognitive skills (literacy, numeracy)
- discipline-specific skills
- higher-order cognitive skills
- transferrable skills ("soft skills")

Lumina Foundation's Degree Qualifications Profile (DQP):

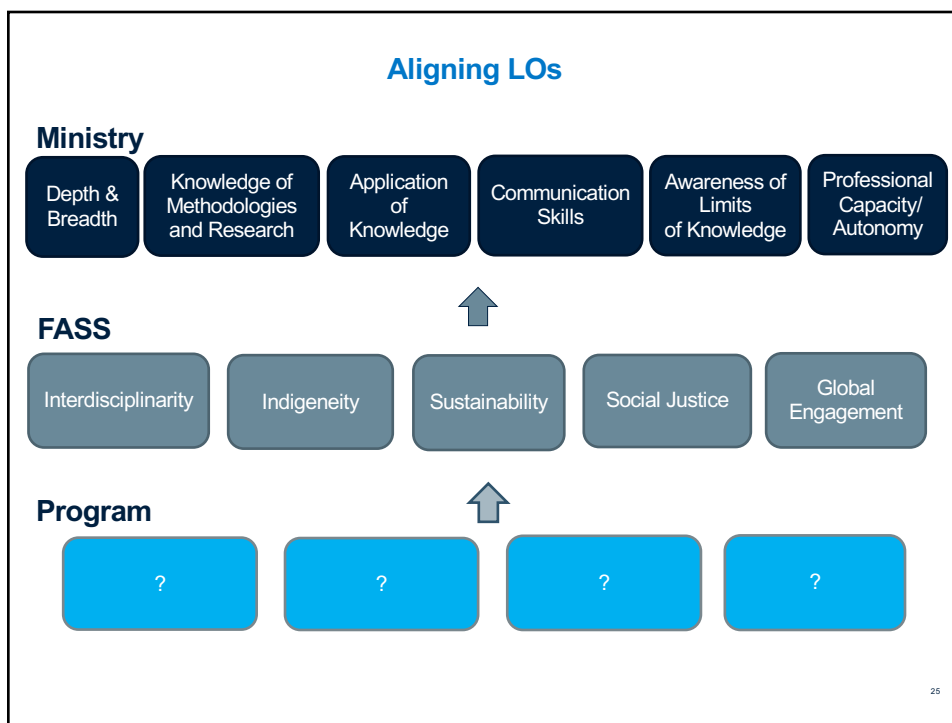
- Specialized knowledge (+ Tuning)
- Broad and integrative knowledge
- Intellectual skills
- Applied and collaborative learning
- Civic and global learning

Knowledge/skill area-based categories:

- Verbal, written, visual communication
- Interpersonal skills (team work, collaboration, leadership)
- Research & laboratory skills
- Cognitive skills (analysis, interpretation, application)
- Metacognitive skills (self-reflection, self-evaluation)




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Equity-Centered Learning Outcomes

Case Study: Department of Sociology at Midwestern State College: explore how to integrate equity into the sociology curriculum = new group project for students in both qualitative and quantitative methods courses to conduct research on how equity could and should be included in the curriculum (Waterman, Baker, Henning, Lundquist, 2022)



Recommendations: Rather than simply having a list of program outcomes, students recommended organizing them into “pillars:”

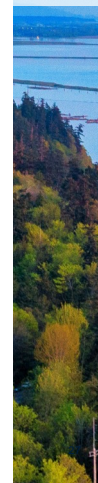
- Theory
- Theory application
- Research methods
- Equity = Outcome areas: perspective-taking, communication, collaboration, social and self-awareness, and addressing inequities

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What are some tips for writing PLOs?

- Think of the different **contexts** and **ways** in which students are asked to **demonstrate** what they know and can do.
- Reflect on expected areas of growth or development across the program to help **identify categories** (written and oral communication, teamwork & collaboration, etc.).
- Develop outcomes that reflect both low and high-order skills or **all domains** in a framework.
- Keep statement **short** and limited to 1 outcome.
- Find **balance** between being too detailed (CLO) vs. too generic (not discipline-specific).
- **No. PLOs** to aim for: min 5 and max 20
- Use a S.S.M.A.R.T.T.T. way...



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How to write a S.S.M.A.R.T.T.T PLO?

(Adapted from Doran, 1981 & McKeown, 2018)



Student-centered	Address what will be learned vs what will be taught
Specific	State who, what, where, why something will be accomplished
Measurable	Consider extent to which outcome is assessable, demonstratable
Attainable	Be realistic in what students can achieve in alignment with the program's purpose
Relevant	Choose outcomes that align with needs of students, courses, program, and degree
Time-bound	Include realistic targets for milestones, frequency indicators, and end-goal
Transparent	Use clear and easy-to-understand language for all stakeholders
Transferable	Consider how outcome will apply to other contexts outside the institution

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Evolution of an outcome...

Students will be able to...

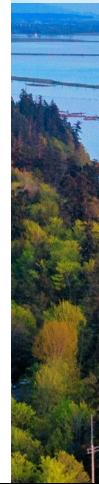
Learn strategies for problem-solving and conflict resolution.



Develop skills to resolve personal conflicts and support others in resolving conflicts.



Demonstrate how to resolve conflicts in negotiating agreements with classmates.



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How S.S.M.A.R.T.T.T. are these PLOS?

After successful completion of this program, students will:

- Consider ethics in policy in political science.
- Use computer science theory.
- Participate effectively in teamwork in psychology.
- Incorporate ethical considerations in solutions to issues embedded in cultural, historical, and international contexts.
- Apply computer science theory and software development fundamentals to produce computing-based solutions.
- Demonstrate effective use of teamwork skills in activities relevant to the discipline of psychology.



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Are you ready for the development phase?

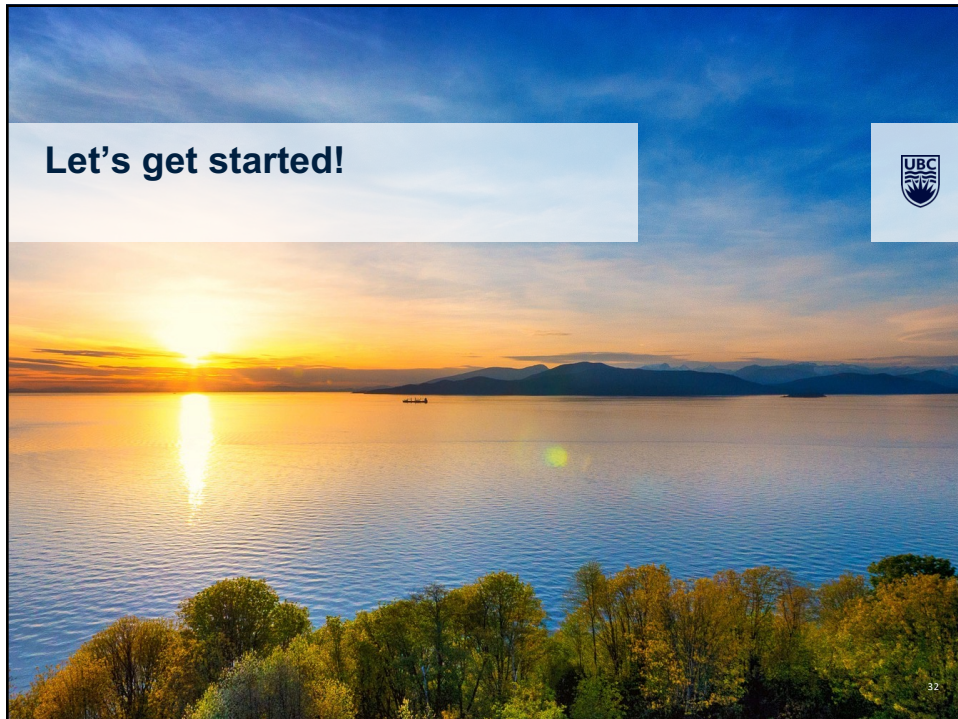
- **Identify needs across/within concentrations**
 - Do you need a set of umbrella PLOs?
 - Do you need separate PLOs per concentration?
- **Identify what outcomes already exist**
 - Check for existing general degree outcomes.
 - Choose any strategic priorities with which to align.
 - Note any accreditation/credential standards.
 - Map your existing curricula (Curriculum MAP)
- **Choose a taxonomy of learning**
 - Decide which taxonomy best captures expectations for student development in your discipline.
 - Identify verbs across domains that demonstrate learning.
- **Brainstorm categories & individual outcomes**
 - Capture program specializations and unique expertise.
 - Reflect on what graduates will need to do as professionals.



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Let's get started!



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Are you writing S.M.A.R.T. outcomes?



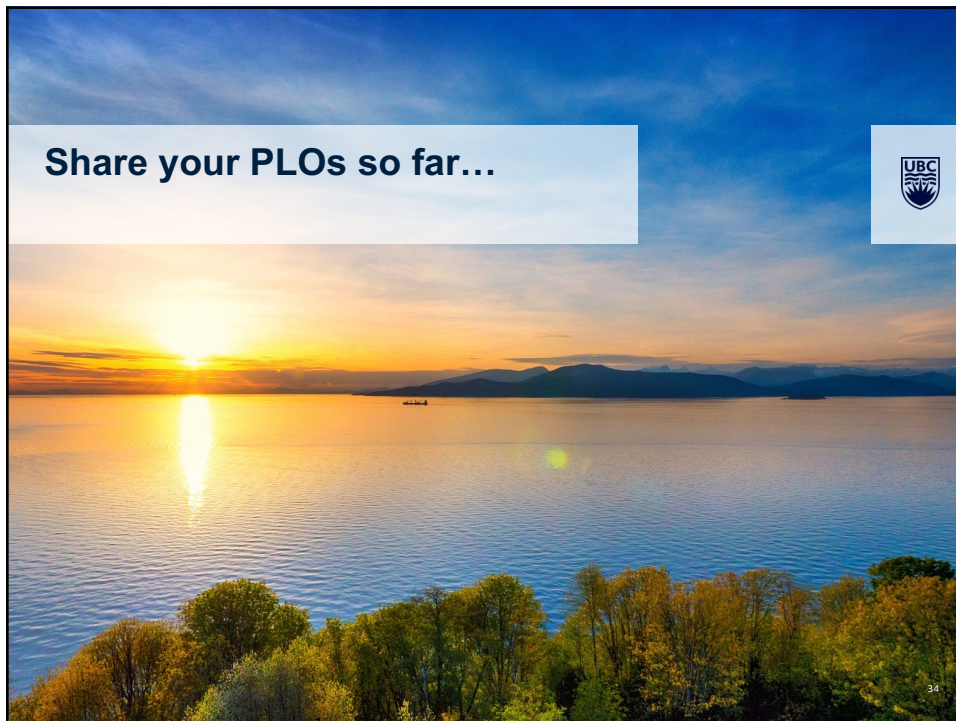
At the end of the astrophysics program, students will be able to:

- **Specific**
 - select and integrate information from a variety of sources, including electronic and print resources, community resources and personal data, to answer the selected questions.
- **Measurable**
 - communicate scientific ideas, procedures, results and conclusions using appropriate SI units, language and formats.
- **Attainable:**
 - predict the appearance and movement of visible celestial objects.
- **Relevant:**
 - describe, evaluate and communicate the impact of research and other achievements in space technology on our understanding of scientific theories and principles and on other fields of activity.
- **Time-bound:**
 - clearly communicate and defend their work in verbal, written, and visual formats to scientific and non-scientific audiences at least once at each level of the program.

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Share your PLOs so far...



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Your PLOs



At the end of the program, students will be able to...

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Let's apply the PLO rubric



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Rubric for Assessing PLOs: Part 2

PART 2: Reflecting on each individual PLO			
PLO #: Statement	Criteria	Strengths	Actions to Improve
	<p>Focus: Is student-centered not teaching-centered; aligned with needs of students, courses, program, and degree; transferable to other contexts outside the institution</p>		
	<p>Construction: Has an operational verb (preferably limited to 1 behaviour) with statement that explains what students can do or how they approach a task and the context in which they demonstrate it</p>		
	<p>Language: Uses clear and easy-to-understand language for all stakeholders (no jargon, acronyms, product names); balances being too detailed (CLO) vs. too generic (not discipline-specific)</p>		
	<p>Usability: Describes something measurable (consider the mapping scale) & demonstratable; attainable by students within scope of the program; includes realistic targets for milestones, frequency indicators, and/or end-goal; can be mapped to courses in the program</p>		

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Final Thought...



Learning outcomes are only as good as the conversations they generate.

(www.csumb.edu/tla).

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References & Resources



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