

# Aligning Learning Outcomes with Assessment

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# Learning Outcomes

By the end of this session, participants should be able to:

1. Describe the difference between summative and formative assessment and list basic assessment principles
2. Define learning outcomes
3. Explain how outcomes operate at various levels of course design
4. Discuss why outcomes are useful to both instructors and students
5. Explain Bloom's Taxonomy and describe how it is useful in course design and assessment
6. Write SMART learning outcomes
7. Propose assessment strategies that align with learning outcomes



# Summative Assessment

- Pass/fail
- Grade/rank students
- Assess student readiness to progress/enter course/program
- Identify areas for teaching improvement
- [End of unit of instruction]

Learning Outcome 1



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# Formative Assessment

- Provide feedback
- Practices key skills
- Motivate student learning
- Diagnose students' strengths/weakness
- Identify areas for review
- Identify areas for teaching improvement
- [Occurs throughout learning process]

Learning Outcome 1



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# Basic Principle of Assessments

- Expectations and goals should be unambiguous
- Assessments should demonstrate a clear relationship to course components
- Assessment should NOT
  - Be a guessing game
  - Simply test recall, but also ability to apply, analyze, synthesize new information

Learning Outcome 1



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# What is a learning outcome anyway?

Learning outcomes are statements that indicate “what a learner is expected to know, understand/ or be able to demonstrate after the completion of the learning process.” (Kennedy et. All, 2006, p. 6)

Learning Outcome 2



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# Learning Outcomes in Course Design

Broad—description of content, main goals

Course Goals/  
Objectives

Measurable skills, knowledge, competencies

Course  
Outcomes

Lesson  
Outcomes

Specificity

Learning Outcome 3



# Why Are Outcomes Important?

If you want students to “find a lifetime of joy in continued learning, about your subject, you need to translate those dreams into explicit goals for the course you teach.” (Fink, 2013, 81)

Learning Outcome 4



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Careful alignment is at the heart of  
good course design

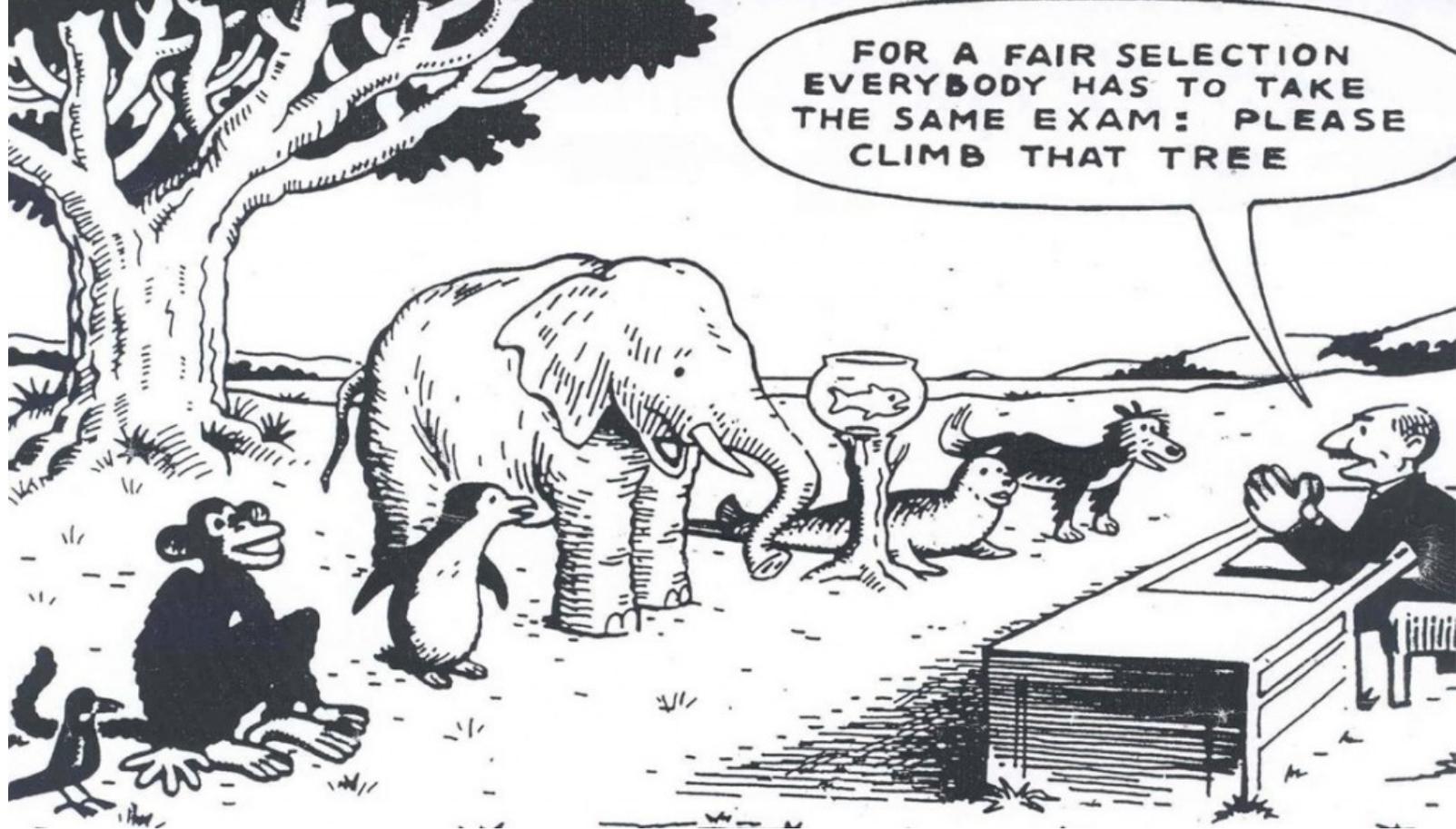


Course Goals  
Course Outcomes  
Lesson Outcomes  
Assessment Strategies

Learning Outcome 4



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“Everyone is a genius . But if you judge a fish by its ability to climb a tree, it will spend its whole life believing that it it stupid.” ~ Albert Einstein

<http://www.coolcatteacher.com/quotes/education-cartoon-everyone-read/>



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# Outcomes—For the Instructor

## The Guiding Light in Course Design

- Assists with the focused, strategic:
  - Selection of content
  - Teaching—order, purpose of activities
  - Targeting Bloom's
  - Development of instructional materials
  - Identification learning support required
- Allows for strategic, fair, transparent assessment
- Decreases instructor frustration
- Avoid student frustration and grade appeals

Learning Outcome 4



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# Outcomes—For Students When Outcomes are Well Constructed

- Students have a clear understanding of
  - Course expectations
  - Assessment strategies *and* motivation behind them
  - How to gauge, reflect upon, and self-direct learning
- Motivation can increase
- Frustration and complaints decrease
- Quality of performance increases

Learning Outcome 4



# Bloom's Taxonomy Domains

**Cognitive** (Skills/Knowledge) —Mental abilities

**Affective** (Attitudes) How we deal with things emotionally, such as feelings, values, appreciation, enthusiasms, motivations, and attitudes

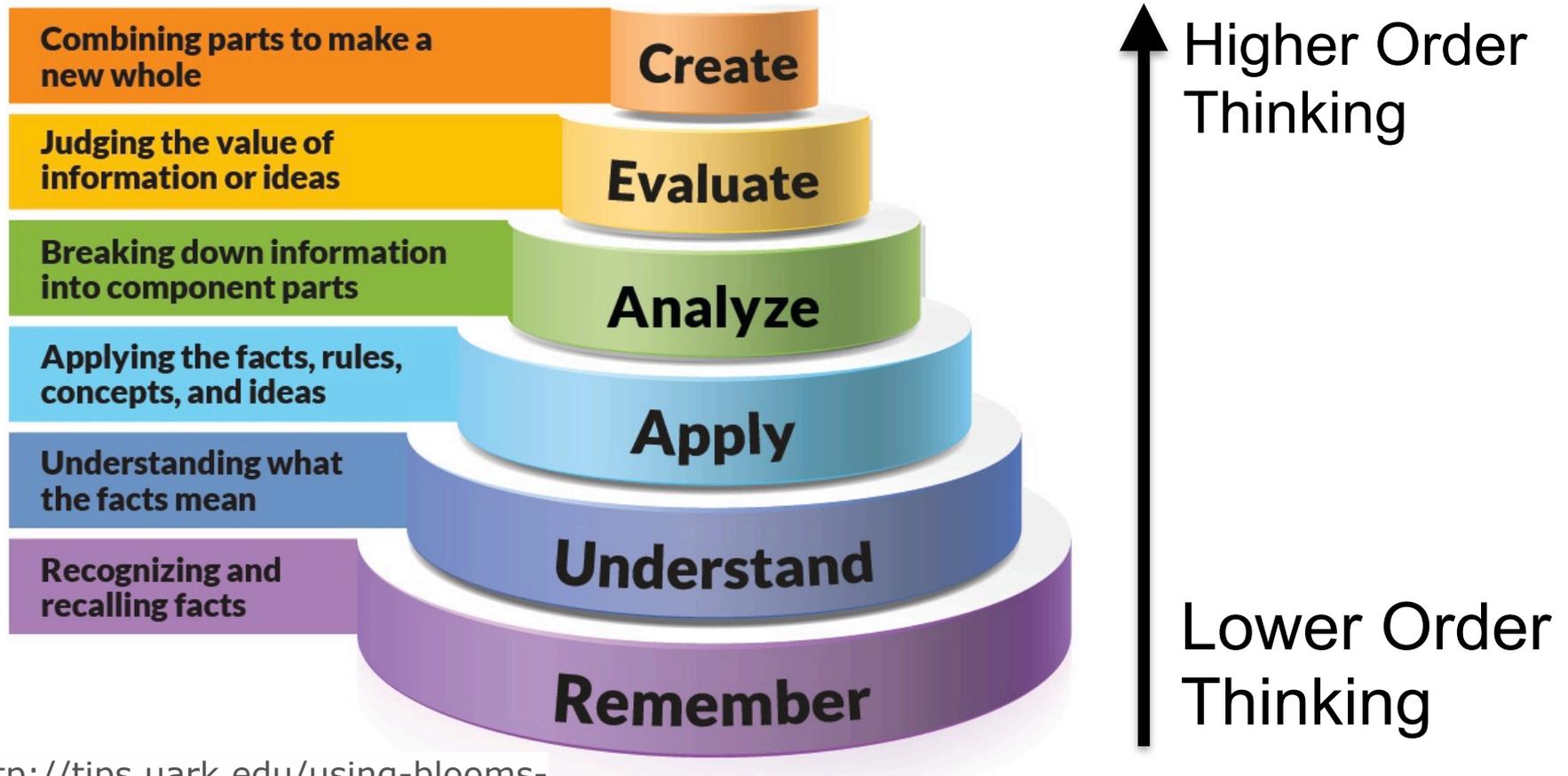
**Psychomotor** (Skills)—Manual or physical skills

Learning Outcome 5



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# Bloom's Taxonomy | Cognitive Domain



<http://tips.uark.edu/using-blooms->

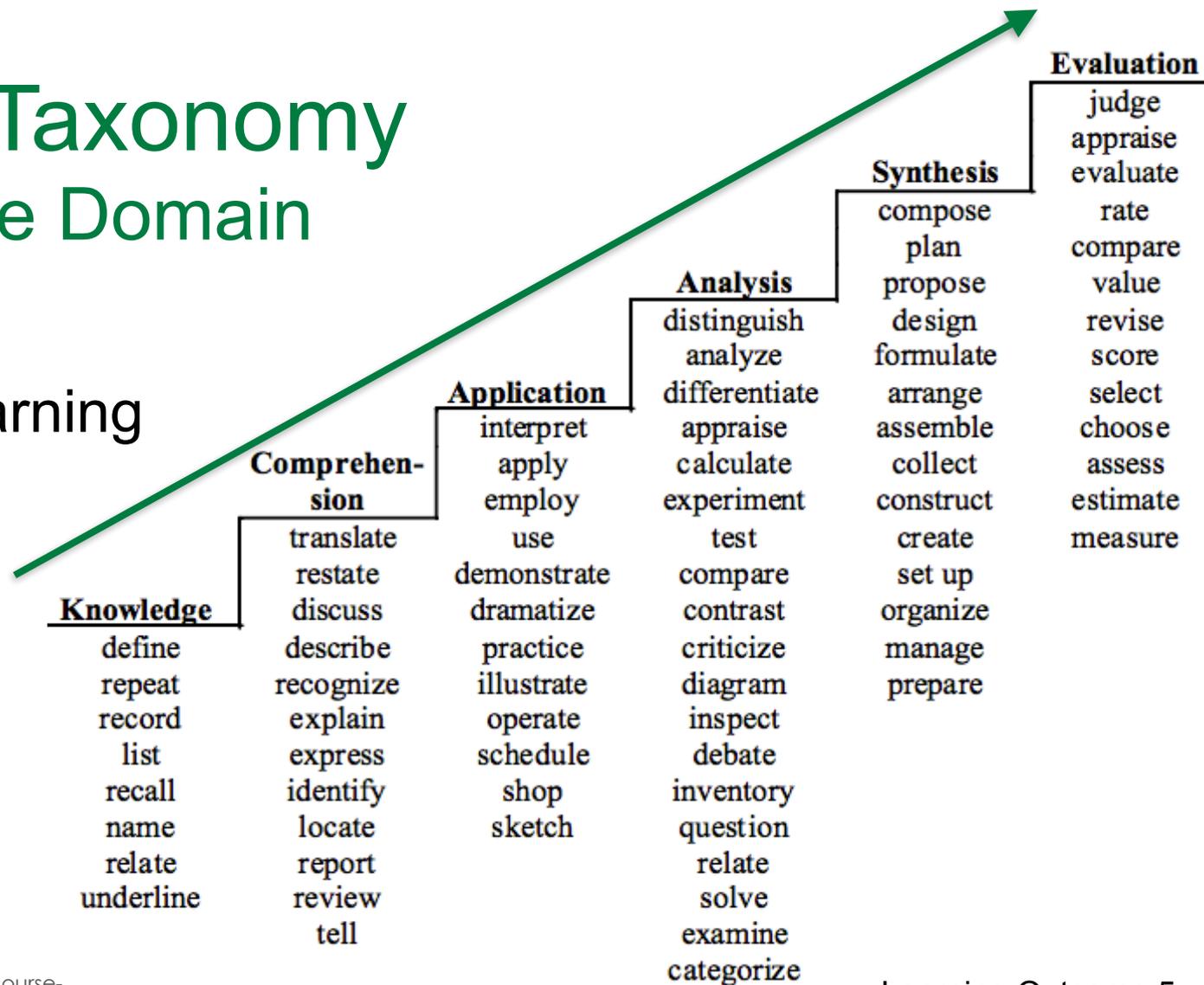
Learning Outcome 5



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# Bloom's Taxonomy Cognitive Domain

## Verbs Chart for Developing Learning Outcomes



<https://teachingcommons.stanford.edu/resources/course-preparation-resources/course->

Learning Outcome 5



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# SMART Outcomes

**S**pecific and student focused  
(Students will be able to...)

**M**easurable in terms of student success

**A**ttainable by learner population being addressed

**R**elevant to the focus/goals of the course

**T**ime frame for completion is realistic

Learning Outcome 6



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# Building Outcomes

**Learner Analysis**—what are the characteristics of the learner population

**Knowledge/Skill, Behaviour, Psychomotor Skill** – what competency does a learner need to demonstrate

**Criteria** –at what level learner must perform to be judged adequate

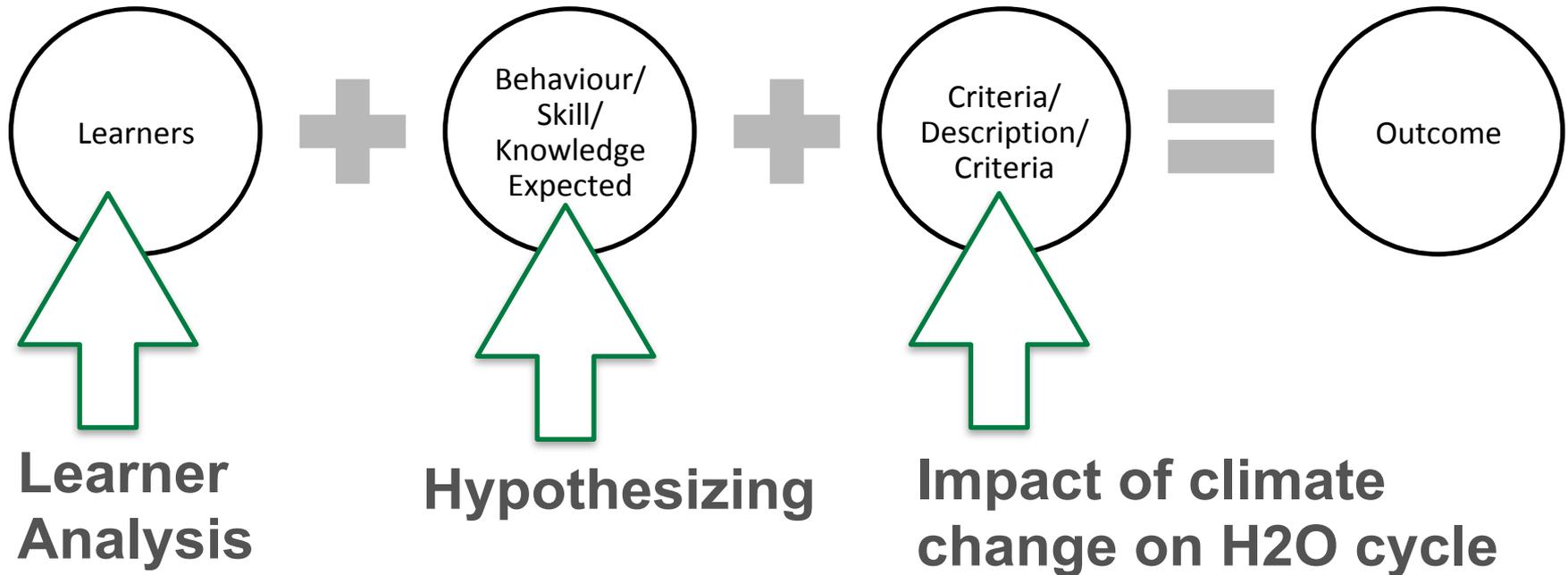
**Conditions** – under what conditions will the learner demonstrate their skills

Learning Outcome 7



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# Outcomes Formula



Course Outcome: “By the end of the course, students should be able to hypothesize the impact of climate change on the water cycle.”

Learning Outcome 6

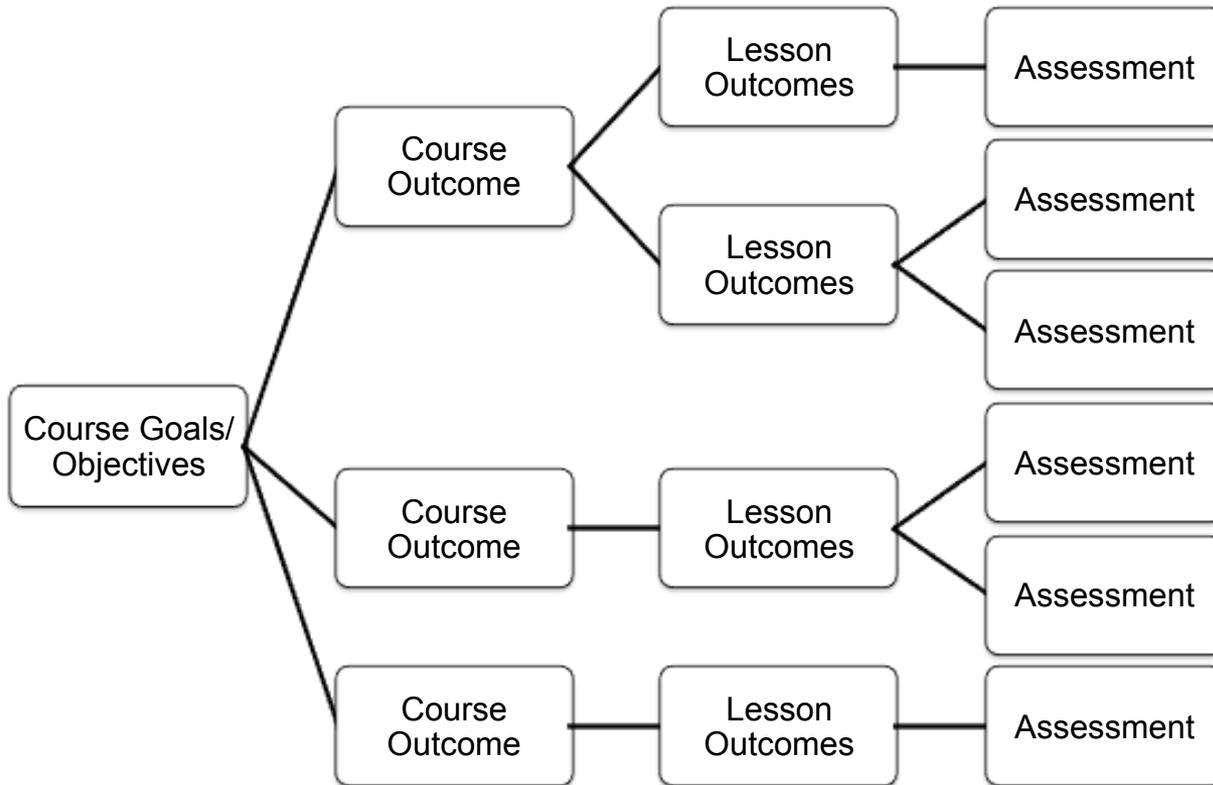


# Your Turn

In pairs, choose ONE course objective whether it meets the SMART criteria  
If it's not SMART—propose how you could make it SMART(ER)!

- Analyze blood samples using equipment at local community hospitals.
- Students will appreciate the awesome power of nature.
- Students will develop an individual learning plan for a child with a learning disability.
- An introduction to fundamentals concepts in fluid dynamics will be taught
- Differentiate among five major approaches to analyzing literature.
- Students will understand why geologic catastrophes happen in some places but not in others.

# Mapping Outcomes and Assessment



Assessment determines if learning outcomes have been met

Learning Outcome 7



# Music 101

## COURSE GOALS

Develop knowledge of classical and early romantic repertoire and build critical listening skills

## COURSE OUTCOMES (5-8 in course)

**Explain** major stylistic differences of periods

**Explain** and **illustrate** structures of major genres of the and romantic periods

**Explain** major stylistic differences of between composers

**Identify** different genres upon hearing musical examples

**Differentiate** musical periods upon hearing musical example

**Differentiate** composers upon hearing musical example

## LESSON OUTCOMES

**Explain** (and **illustrate**) the 4 movement structure of the classical symphony

**Identify** the symphony as a genre and movement number upon hearing

**Describe** how Mozart, Haydn, and Beethoven differ compositionally

**Differentiate** between these composers upon hearing and **justify**

Specificity



## ASSESSMENT QUESTION (Symphony Quiz)

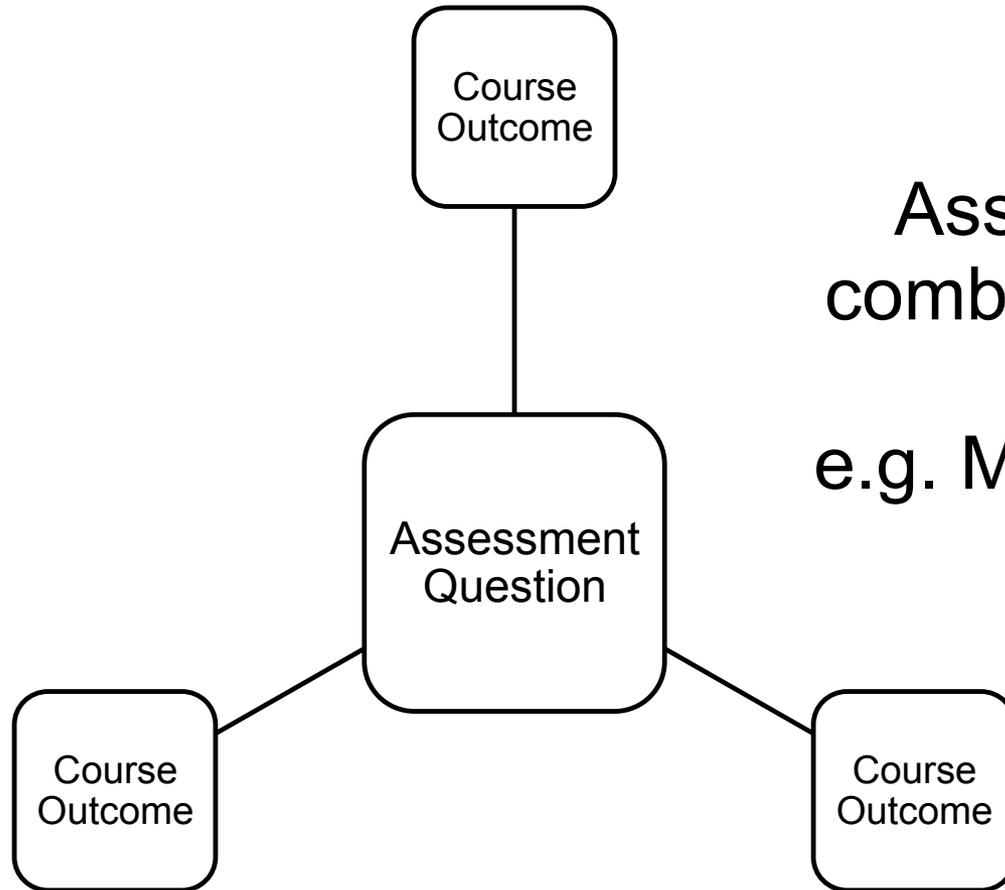
Upon hearing the musical example:

Identify the **movement number**, and **illustrate** the movement structure  
**Differentiate** whether the composer is Mozart, Haydn, or Beethoven is  
and **justify** claim with evidence

Students must be able to:

- Recall, explain, and illustrate structures of 4-movement symphony structure (knowledge, comprehension)
- Recall and explain stylistic differences between composers (knowledge, comprehension)
- Differentiate between stylistic differences between Mozart, Haydn, and Beethoven (application and analysis)
- Differentiate between composers and justify (application, analysis, evaluation)

# Mapping Outcomes and Assessment



Assessments might combine more than one outcome.  
e.g. Midterm/Final Exam Question

Learning Outcome 7



## ASSESSMENT QUESTION (Final Exam Question)

Upon hearing the musical example:

**Identify** the genre, movement number, and **illustrate** the movement structure  
**Differentiate** who the composer is and **justify** claim with evidence

Students must be able to:

- Recall stylistic features of the various periods studied (knowledge, comprehension)
- Recall and explain stylistic differences between composers (knowledge, comprehension)
- Recall, explain, and illustrate genre structures (knowledge, comprehension)
- Differentiate genres upon hearing at the movement level (application and analysis)
- Differentiate between stylistic differences (application and analysis)
- Differentiate between composers and justify (application, analysis, evaluation)

# From Outcomes to Assessment

## Aligning Learning Outcomes with Assessment

Here's your challenge!

In groups of 3, choose one of the case studies given below and:

Introduce yourselves

Determine who will

1. Record notes from your discussion
2. Present the group's ideas to class

Then as a group:

1. Improve the at least one outcome (Outcomes should be SMART!)
2. Propose an assessment strategy for the learning outcome you rewrote (Hint: Use handout for ideas!)

Learning Outcome 7



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# SMART Outcomes

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**T**ime frame for completion is realistic



Type of learning objective	Examples of appropriate assessments
<b>Recall</b> <b>Recognize</b> <b>Identify</b>	Objective test items such as fill-in-the-blank, matching, labeling, or multiple-choice questions that require students to: <ul style="list-style-type: none"> <li>• recall or recognize terms, facts, and concepts</li> </ul>
<b>Interpret</b> <b>Exemplify</b> <b>Classify</b> <b>Summarize</b> <b>Infer</b> <b>Compare</b> <b>Explain</b>	Activities such as papers, exams, problem sets, class discussions, or concept maps that require students to: <ul style="list-style-type: none"> <li>• summarize readings, films, or speeches</li> <li>• compare and contrast two or more theories, events, or processes</li> <li>• classify or categorize cases, elements, or events using established criteria</li> <li>• paraphrase documents or speeches</li> <li>• find or identify examples or illustrations of a concept or principle</li> </ul>
<b>Apply</b> <b>Execute</b> <b>Implement</b>	Activities such as problem sets, performances, labs, prototyping, or simulations that require students to: <ul style="list-style-type: none"> <li>• use procedures to solve or complete familiar or unfamiliar tasks</li> <li>• determine which procedure(s) are most appropriate for a given task</li> </ul>
<b>Analyze</b> <b>Differentiate</b> <b>Organize</b> <b>Attribute</b>	Activities such as case studies, critiques, labs, papers, projects, debates, or concept maps that require students to: <ul style="list-style-type: none"> <li>• discriminate or select relevant and irrelevant parts</li> <li>• determine how elements function together</li> <li>• determine bias, values, or underlying intent in presented material</li> </ul>
<b>Evaluate</b> <b>Check</b> <b>Critique</b> <b>Assess</b>	Activities such as journals, diaries, critiques, problem sets, product reviews, or studies that require students to: <ul style="list-style-type: none"> <li>• test, monitor, judge, or critique readings, performances, or products against established criteria or standards</li> </ul>
<b>Create</b> <b>Generate</b> <b>Plan</b> <b>Produce</b> <b>Design</b>	Activities such as research projects, musical compositions, performances, essays, business plans, website designs, or set designs that require students to: <ul style="list-style-type: none"> <li>• make, build, design or generate something new</li> </ul>

# Case Study 1

## General Nutrition | Course Outcomes

- Understand the digestive system
- Know the steps involved in metabolism and the ways energy is derived from carbohydrate, fat, and protein
- Demonstrate knowledge of the Food Guide Pyramid
- The benefits associated with physical activity and the components of a sound fitness or health program will be taught
- Students will be introduced to the ways nutrition and lifestyle choices impact the life cycle



## Case Study 2

# History of Public Policy in the US | Course Outcomes

- Understand past public policy debates in the United States that exemplify a broad range of historical and contemporary concerns.
- Discuss these debates using theoretical frameworks provided in class.
- Understand some aspects of the expansion and contraction of federal intervention in social and economic life over the past 200-plus years, and evaluate arguments for and against these actions.
- Critically apply the lessons learned in this class to other history courses.



# Cognitive Psychology | Course Outcomes

## A Better Example

- **Recognize** and **recall** major terms and concepts in cognitive psychology
- **Describe** and **explain** major methods and theories
- **Compare** and **contrast** alternative theories or approaches in terms of their underlying processes and predictions
- **Evaluate** major studies in terms of their methods, results, conclusions & implications
- **Apply** theories or findings to real world situations
- **Generate** and **explain** examples that demonstrate or test theories or concepts
- **Analyze** and **synthesize** concepts and theories across topics, readings, and discussions
- **Communicate** ideas in writing in a clear, coherent, and logical style



# Biology 103 | Unit 1 Objectives

## A Better Example

- **List, describe, and give examples** of the characteristics of living things.
- **Sequence** the levels of biological organization from smallest to largest, including: atom, cell, tissue, organ, organ systems, and organism.
- **Explain** what is meant by "homeostasis."
- **Give examples** of how the systems of the body contribute to homeostasis.



# Next Steps

## Increase Assessment Reliability

A few things to consider

- Provide clear, concise directions
- Add questions\*\*
- Vary question types
- Vary difficulty of questions (target multiple levels of Bloom's)
- Be cautious of phrasing, terminology
- Check for score spread
- Quality control (administration, grading)



# Supporting Sources

[A Guide to Learning Outcomes at the University of Alberta, https://cloudfront.ualberta.ca/-/media/centre-for-teaching-and-learning/learning-outcomes/learning-outcomes-guide-section1-definitions-and-considerations.pdf\)](https://cloudfront.ualberta.ca/-/media/centre-for-teaching-and-learning/learning-outcomes/learning-outcomes-guide-section1-definitions-and-considerations.pdf)

Graham Gibbs and Claire Simpson, "Conditions Under Which Assessment Supports Students' Learning," *Learning and Teaching in Higher Education*, Issue 1, 2004-05, <http://www.open.ac.uk/fast/pdfs/Gibbs%20and%20Simpson%202004-05.pdf>

[http://www.heqco.ca/sitecollectiondocuments/heqco.loahandbook\\_eng\\_2015.pdf](http://www.heqco.ca/sitecollectiondocuments/heqco.loahandbook_eng_2015.pdf)

[https://www.uwo.ca/tsc/graduate\\_student\\_programs/pdf/LearningObjectivesArreola.pdf](https://www.uwo.ca/tsc/graduate_student_programs/pdf/LearningObjectivesArreola.pdf)

[http://www.thelearningmanager.com/pubdownloads/developing\\_clear\\_learning\\_outcomes\\_and\\_objectives.pdf](http://www.thelearningmanager.com/pubdownloads/developing_clear_learning_outcomes_and_objectives.pdf)

[http://www2.tulane.edu/liberal-arts/upload/Student\\_Learning\\_Outcomes.pdf](http://www2.tulane.edu/liberal-arts/upload/Student_Learning_Outcomes.pdf)

<http://www.cmu.edu/teaching/designteach/design/learningobjectives-samples/learningobjectives-hss.html#HSS22>

<https://www.cmu.edu/teaching/assessment/basics/alignment.html>



# Questions!



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