Learning outcomes are measurable statements that articulate what students should know, be able to do, or value as a result of taking a course or completing a program. Learning outcomes often take this form:

- As a result of participating in [program/course name], you (the student) will be able to [action verb] [learning statement].

Use your learning outcomes as a tool. **Let them inform and guide your choice of teaching strategies, course activities, and assessments**.

Why Define Learning Outcomes?

Clearly identified learning outcomes allow instructors to:

- Make hard decisions about selecting course content
- Design assessments that allow students to demonstrate their knowledge and skills
- Design teaching strategies or learning activities that will help students develop their knowledge and skills
- Measure student learning accurately and effectively

Having access to articulated learning outcomes (in a syllabus, for example) helps students:
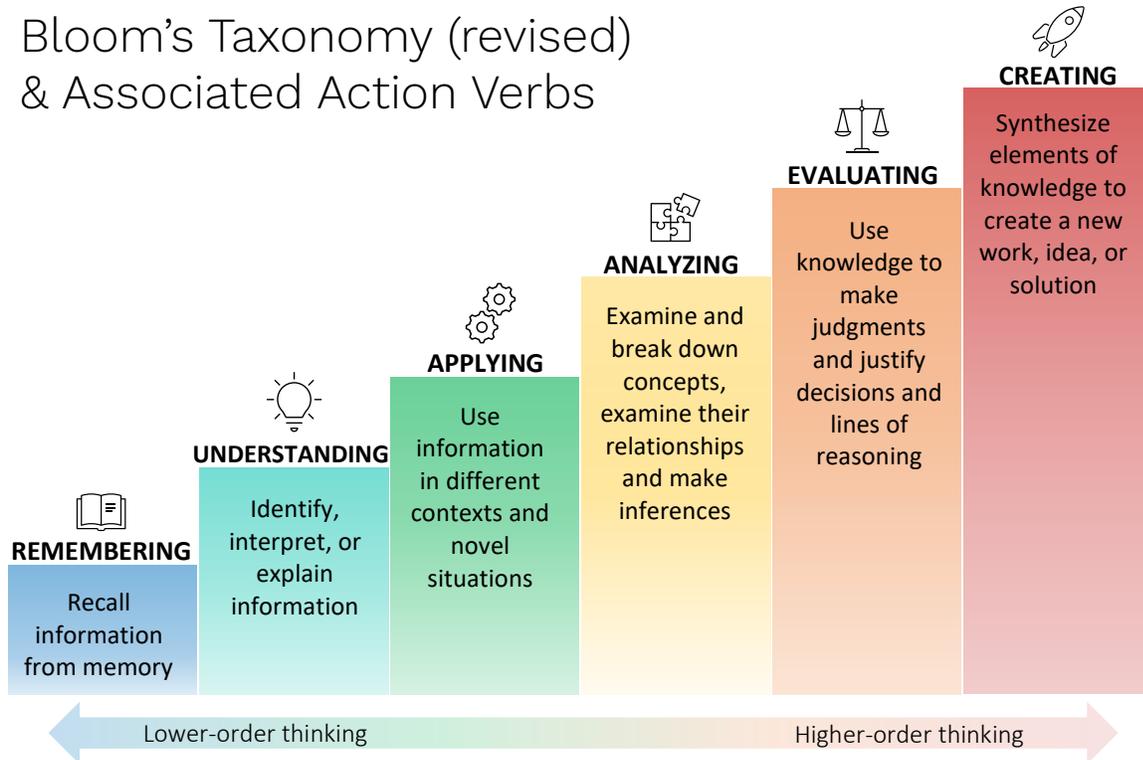
- Decide if the course is a good fit for their academic trajectory
- Identify what they need to do to be successful in the course
- Take ownership of their progress
- Be mindful of what they are learning

Did you know?
Learning outcomes are also driven by compliance. NYSED program audits rely on course-level learning outcomes to assess if the college's learning outcomes are being met. Another reason why learning outcomes need to be measurable!

Creating Learning Outcomes for your Course

✓ Ask yourself what the most important things a student should know (cognitive), be able to do (skills), or value (affective) after completing the course/program.

✓ Consult the list of action verbs below that are associated with Bloom's Taxonomy, a hierarchy of learning levels from basic knowledge (aka 'low-order thinking') to the highest level of creativity (aka 'high-order thinking'). Action verbs result in overt behavior or products that can be **observed** and **measured**.

✓ **Avoid verbs that are unclear and cannot be observed and measured easily**.
For example: appreciate, become aware of, become familiar with, know, learn, and understand.

✓ Draft a list of possible learning outcomes. Be realistic in considering what is possible for students to accomplish in your course. **Only keep the most essential learning outcomes**.

Bloom's Taxonomy (revised) & Associated Action Verbs

CREATING
Synthesize elements of knowledge to create a new work, idea, or solution

EVALUATING
Use knowledge to make judgments and justify decisions and lines of reasoning

ANALYZING
Examine and break down concepts, examine their relationships and make inferences

APPLYING
Use information in different contexts and novel situations

UNDERSTANDING
Identify, interpret, or explain information

REMEMBERING
Recall information from memory

Lower-order thinking ⟶ Higher-order thinking

REMEMBERING	UNDERSTANDING	APPLYING	ANALYZING	EVALUATING	CREATING
State	Interpret	Implement	Differentiate	Appraise	Design
Define	Exemplify	Solve	Organize	Argue	Assemble
List	Classify	Use	Relate	Defend	Construct
Duplicate	Summarize	Apply	Compare	Judge	Hypothesize
State	Infer	Demonstrate	Contrast	Support	Develop
Repeat	Paraphrase	Interpret	Distinguish	Evaluate	Formulate
Memorize	Describe	Operate	Examine	Critique	Arrange
Reproduce	Discuss	Illustrate	Question	Weigh	Generate
Arrange	Explain	Convert	Test	Debate	Devise
Order	Identify	Discover	Criticize	Measure	Synthesize
Match	Recognize	Prepare	Discriminate	Verify	Plan
Locate	Report	Manipulate	Experiment	Assess	Compose
Identify	Translate	Modify	Classify	Justify	Propose
Label	Express	Compute	Investigate	Judge	Produce
Name	Restate	Change	Separate	Recommend	Create
Select	Approximate	Relate	Attribute	Rate	Author
Record	Detail	Employ	Inventory	Determine	Combine
Cite	Outline	Execute	Explore	Select	Cultivate
Indicate	Generalize	Dramatize	Dissect	Prioritize	Model
Enumerate	Review	Adapt	Diagnose	Prescribe	Integrate
Index	Articulate	Practice	Correlate	Criticize	Improve
Quote	Tell	Process	Diagram	Grade	Enhance
Delineate	Locate	Derive	Categorize	Conclude	Predict

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Review Your Learning Outcomes

Many practitioners use the acronym SMART to determine whether they have written effective learning outcomes that are Specific, Measurable, Aligned, Realistic, and Timebound.

The following questions will help you determine whether you have written an effective learning outcome:

S   Is the outcome specific?

M   Is the outcome measurable or observable?

A   Is the outcome aligned with the broader outcomes of the course/program?

R   Is the outcome realistic and achievable for students?

T   Is the outcome time bound--does it identify a clear timeframe for achievement?
(e.g., by the end of this course/this class/this activity, students will be able to...)
*most learning outcomes for the overall course are expected to be achieved by the end of the course

Adapted from https://teaching.cornell.edu/resource/learning-outcomes-review-checklist

A good way to verify that your outcomes are measurable is to identify exactly how you will measure them in your class. Use the worksheet on the next page to create your learning outcomes and indicate which of your class activities (quizzes, assignments, etc.) assess each outcome. *suggestion: try including a similar table on your syllabus!

Here are some examples:

Learning outcome (LO) Highlight or underline action verb(s)	1-2 specific examples of how the LO will be assessed e.g. a specific assignment, series of quizzes, etc.
Upon completion of this course, you will be able to ==classify== *mammalian orders based on morphology.*	*1. Dichotomous key assignment* *2. Practical exam*
Upon completion of this course, you will be able to ==acquire== *and* ==synthesize== *information from a variety of sources.*	*1. Literature Review* *2. Project proposal*

CALS Course Learning Outcomes and Assessments Worksheet

Course Name _____

Course Instructor _____

Learning outcome (LO) *Highlight or underline action verb(s)*	1-2 specific examples of how the LO will be assessed e.g. a specific assignment, series of quizzes, etc.

Note that there is room for up to six learning outcomes – aim to create between 4-6 for your course; more than that can diminish the clarity and specificity of your goals.