Student Learning Outcomes
Integrated Assessment of Student Learning

What are student learning outcomes (SLOs)?
Student learning outcomes or SLOs are statements that specify the knowledge (cognitive), skills (psychomotor), and perceptions (affective) students will be able to demonstrate when they have completed or participated in the academic program and/or learning experience.

What is the difference between a course student learning outcome (SLO) and a program student learning outcome (SLO)?
- Program student learning outcomes (SLOs) identify what students should learn as a result of their entire educational experience. For example "Upon completion of the XXXX program, students will be able to discuss the processes of urbanization and modernization in the developing world."
- Course student learning outcomes (SLOs) identify what students should learn as a result of taking a specific course. For example "Upon completion of COUR XXX, students will be able to analyze cities as products of modernization, as expressions of various processes, such as investment and employment."
- Program and course student learning outcomes (SLOs) are connected via disciplinary and institutional outcomes e.g., content knowledge/major, general education competencies, accreditation standards (i2a, ABET).
- Although every course student learning outcome (SLO) does not have to reflect every program, institutional and disciplinary student learning outcome, course student learning outcomes (SLOs) should contribute in some combination to those outcomes. Mapping of course student learning outcomes (SLOs) to program, institutional and disciplinary student learning outcomes (SLOs) helps assure there are integrated and layered opportunities for students to develop the desired outcomes.
  Adapted from: Maki, P.L. (2004). *Assessing for learning: Building a sustainable commitment across the institution*. Sterling, VA: Stylus.

How are student learning outcomes (SLOs) used?
- SLOs identify skills that our students are learning. Are these the skills that we want them to learn? Are these the skills that we are teaching them?
- SLOs enable students to demonstrate what they are learning or have learned from attending UofL (both in- and outside of the classroom).
- SLOs help faculty, chairs/department heads, deans, administrators, and staff understand how to better facilitate student learning through continuous quality improvement.

What are the characteristics of clearly stated and meaningful student learning outcomes (SLOs)?
- SLOs specify an action by the student that must be measurable and able to be demonstrated in terms of knowledge, skills, or perceptions.
- SLOs need to reflect the typical student, expected level of rigor, and the resources available to support student learning.

What needs to be considered when developing student learning outcomes (SLOs)?
- Focus on the end result – student learning. "Upon completion of ___, the student will be able to…"
- Determine a limited number of student learning outcomes that are most applicable to either the course or program. For program student learning outcomes, a general guideline would be 3-5.
- Use concrete action **verbs** that result in observable behavior that can be measured (see table below). Avoid verbs that call for students' behavior which cannot be easily measured (e.g. exposed to, familiar with, learn, understand or know).

Cognitive Learning	Examples of Action Verbs:
Remembering: can the student recall or remember the information?	define, duplicate, list, memorize, recall, repeat, reproduce state
Understanding: can the student explain ideas or concepts?	classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase
Applying: can the student use the information in a new way?	choose, demonstrate, dramatize, employ, illustrate, interpret, operate, schedule, sketch, solve, use, write.
Analyzing: can the student distinguish between the different parts?	appraise, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test.
Creating: can the student create new product or point of view?	assemble, construct, create, design, develop, formulate, write.
Affective Learning	appreciate, accept, attempt, challenge, defend, dispute, join, judge, praise, question, share, support
Psychomotor Learning	write, manipulate, react

Adapted from: a. Palo Alto Colleges (http://www.alamo.edu/pac/assessment/development/AssessmentResources.aspx)
                    b. Bloom, B.S. (Ed.) (1956). *Taxonomy of educational objectives: The classification of educational goals: Handbook I, cognitive domain*. New York: Longmans, Green.

- Ensure that the student learning outcome (SLO) can be measured and that learning is being demonstrated.

Examples of Student Learning Outcomes (SLO)

Student learning outcomes that are general and hard to measure[1]…
… will value exercise as a stress reduction tool.
… will be able to develop and apply effective problem solving skills that would enable one to adequately navigate through the proper resources within the university.
… will demonstrate ability to resolve personal conflicts and assist others in resolving conflicts.
… will demonstrate effective communication, such as facilitating conversations about social issues.

Student learning outcomes that are specific and relatively easy to measure[1] …
… will be able to explain how exercise affects stress.
… will be able to identify the most appropriate resource that is pertinent to their university concern.
… will be able to assist roommates in resolving conflicts by helping them negotiate agreements.
… will demonstrate the ability to analyze and respond to arguments about racial discrimination.

[1] Adapted from University of Rhode Island, Office of Learning & Outcomes Assessment (assess@uri.edu)

How do you measure student learning outcomes (SLOs)?
The primary purpose of assessment is to improve student learning by using results for instructional improvement. Methods of assessment describe the process used to gather data to measure each stated student learning outcome (SLO). When selecting the appropriate assessment method, either direct or indirect assessment can be used to provide evidence that outcomes have been achieved. At least one direct method of assessment must be used for each student learning outcome (SLO).

- Direct measures of outcomes
    - Students **show us** (provide evidence) what they learned.
    - Identify and measure observable behaviors or actions by the learner:
        - ❖ Objective tests, essays, presentations, lab experiments, artistic performance, special projects, classroom assignments, portfolios
- Indirect measures of outcomes
    - Students **tell us** what they learned usually in one of three ways:
        1. What students believe they have learned as a result of the program —self-reported?
            - ❖ Quality Measurement System (QMS), exit surveys, student interviews, alumni surveys, faculty questionnaire, and employer satisfaction surveys
        2. How satisfied they are with their experience – self reported?
            - ❖ From similar sources noted above and typically includes a question about satisfaction
        3. To what degree are students successful through institutional metrics?
            - ❖ Graduation rates, GPA, job placement, continuing education placement
- For each student learning outcome (SLO) using direct and/or indirect measures set specific, appropriate benchmarks or standards for adequate, exemplary, and inadequate performance
    - Internal standards—are students meeting identified program/unit standards?
    - External standards—are students meeting standards set by an entity outside of the university?
    - Internal peer benchmarks—how do students compare to peers within the program/unit?
    - External peer benchmark—how do students compare to peers at other institutions?

How do you identify targets for student learning outcomes (SLOs)?
Targets are specific, quantifiable behavioral expectations of students' collective performance related to each measure of student learning outcome (SLO).

- Express targets as percentages rather than means
    - If you use a rubric, for example, a target that 90% of the students will earn at least a minimally adequate rating is more understandable and useful than a target that students will earn an average of 3.1 on a five-point rubric scale.
    - If using a test, a target that 95% of the students will earn at least a 65 is more understandable and useful than a target that students will earn an average of 73.
- Use of multiple performance targets for several performance levels may be indicated.
    - For example, set a target that 90% of the students earn at least a minimally adequate rating or test score and another that at least 30% earn an exemplary rating or test score.

How to use assessment data from student learning outcomes (SLO) to better facilitate student learning through continuous quality improvement?
- Involve your faculty in planning how to best use results to improve teaching and learning.
- Use results to demonstrate accountability by sharing results with internal and external stakeholders.
- Address disappointing assessment in positive and developmental manner.

Program and course student learning outcomes (SLOs) are connected via disciplinary and institutional outcomes e.g., content knowledge/major, general education competencies, accreditation standards (e.g. i2a, ABET). To further illustrate this integrated approach, undergraduate students have opportunities to enhance their critical thinking skills throughout their educational experience by participating in courses related to general education, their major, and unit-specific Ideas to Action (i2a) initiatives.

Effective Communication
- General Education
- Major

Cultural Diversity
- General Education
- Major

Content Knowledge
- Major

Critical Thinking
- General Education
- Major
- i2a

Formulating Student Learning Outcomes (SLOs) Checklist

I. Student Learning Outcomes (SLOs) Template

When formulating Student Learning Outcomes (SLOs) a useful template is:
As a result of students participating in _____, they will be able to _____.
For example:

II. Student Learning Outcomes (SLOs) Checklist

Evaluate your current Student Learning Outcomes (SLOs) using the following criteria:

	YES	NO
1. Does the SLO focus on students' knowledge, skills or perceptions?		
2. Are there a reasonable number of applicable SLOs?		
3. Have action verbs been used to identify expected behaviors?		
4. Can the SLO be assessed* by a: a. Direct measure		
b. Indirect measure		
5. Have benchmarks/standards been identified for each direct and/or indirect measure?		
6. Are targets set for each direct and/or indirect measure?		

* At least one direct methods of assessment must be used for each student learning outcome (SLO).

III. Student Learning Outcomes (SLOs) Revision

For any criteria noted "no" above, refer to the appropriate section of **the *Student Learning Outcomes: Integrated Assessment of Student Learning*** document for assistance for revisions.   If you have questions or require assistance, please contact Bob Goldstein, Associate University Provost or Dr. Cheryl Gilchrist, Director of Institutional Effectiveness at 852-6169.