

Assessment 101



Definitions

1. What is assessment (in our context)?

- The collection, analysis, and interpretation of data used to improve the quality of academic programs, focusing specifically on student learning;
- The focus of assessment in our context is on student learning at the end of an academic program, upon credentialing, or when a student graduates;
- Assessment is part of the program review cycle;
- It is done annually at undergraduate level;
- Reports are due October 1st each year.

Definitions

2. Outcomes Assessment:

- A process of measuring learning outcomes to analyze and reflect on student learning and make informed decisions for improvement.

3. Direct assessment/ Direct measure:

- Directly measures student performance on learning outcomes;
 - e.g., test, presentation, portfolio
- Student learning data is collected as evidence of what students have and have not learned;
- Ideally, data will come only from major required courses (not electives, if possible).

Definitions

4. Indirect assessment/Indirect measure:

- Measures opinions or thoughts about students' own knowledge, skills, attitudes, learning experiences, and perceptions of services received.
 - e.g., course grade, self-evaluation

5. Targets (cutoff criteria):

- Targets are an arbitrary number used to determine if students were successful in meeting the outcome (e.g., 75% of students will score 80% or better on XYZ assignment;
- Targets will need to be identified for each assessment method for each outcome.

Definitions

6. Learning Outcomes or Student Learning Outcomes (SLO):

- Statements of the knowledge, skills and abilities individual students should possess and can demonstrate upon completion of a sequence of learning experiences, leading to an academic credential.
- Learning outcomes should also align and mirror any programmatic accreditation or professional standards/competencies for an area. Learning outcomes guide course, program, and service design—outcomes are the destinations.

Definitions

7. Goals, Objectives and Outcomes:

- Goals: Stated broadly, they are the end results of an activity, a program, or a service; found at all levels; institutional, departmental, and program levels and individual courses.
 - Ex: Creativity, critical thinking, oral communication.
- Objectives: Specific accomplishments attained to meet a goal; how a goal will be met.
 - Ex: Instruction, analysis, discussion
- Student Learning Outcomes: What students know or are able to do at the end of an experience; What students produce, which is both measurable and observable.
 - Ex: Exam score, project score, rubric applied to written paper.

Goals

(course, program)

Objectives

(course, program)

Outcomes

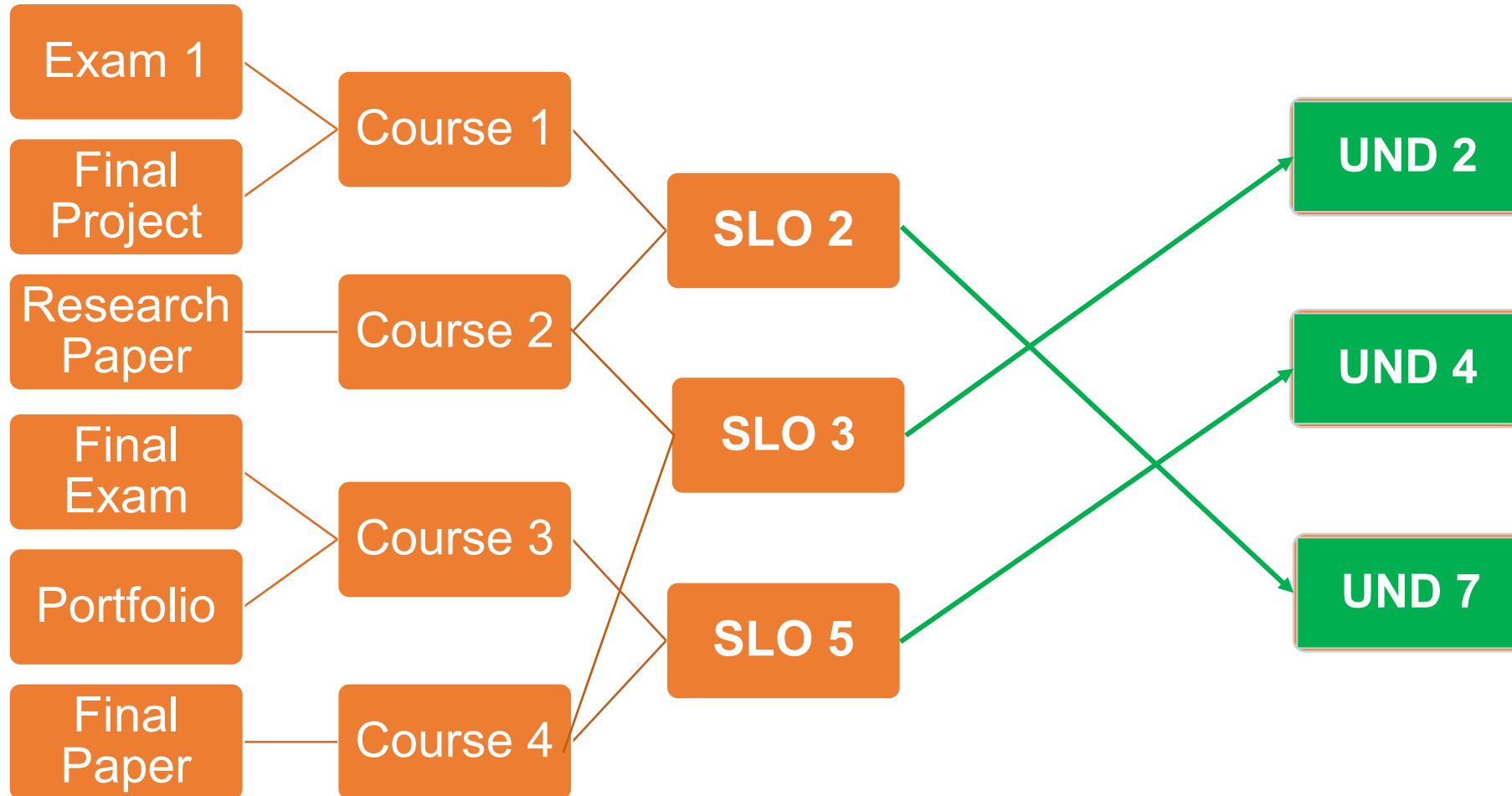
(program)

Measures (Direct)

Courses

SLOs (Program)

UND Outcomes



Why Not Just Use Course Grades?

Grades:

- Aggregated, thus less precise
- One course at a time, thus not holistic or longitudinal
- NOT always defined by learning outcomes
- Tend to have extraneous aspects, like class attendance, submission deadlines, etc.
- Address course objectives, not necessarily program level learning outcomes
- Historically used for transcripts, registration and records

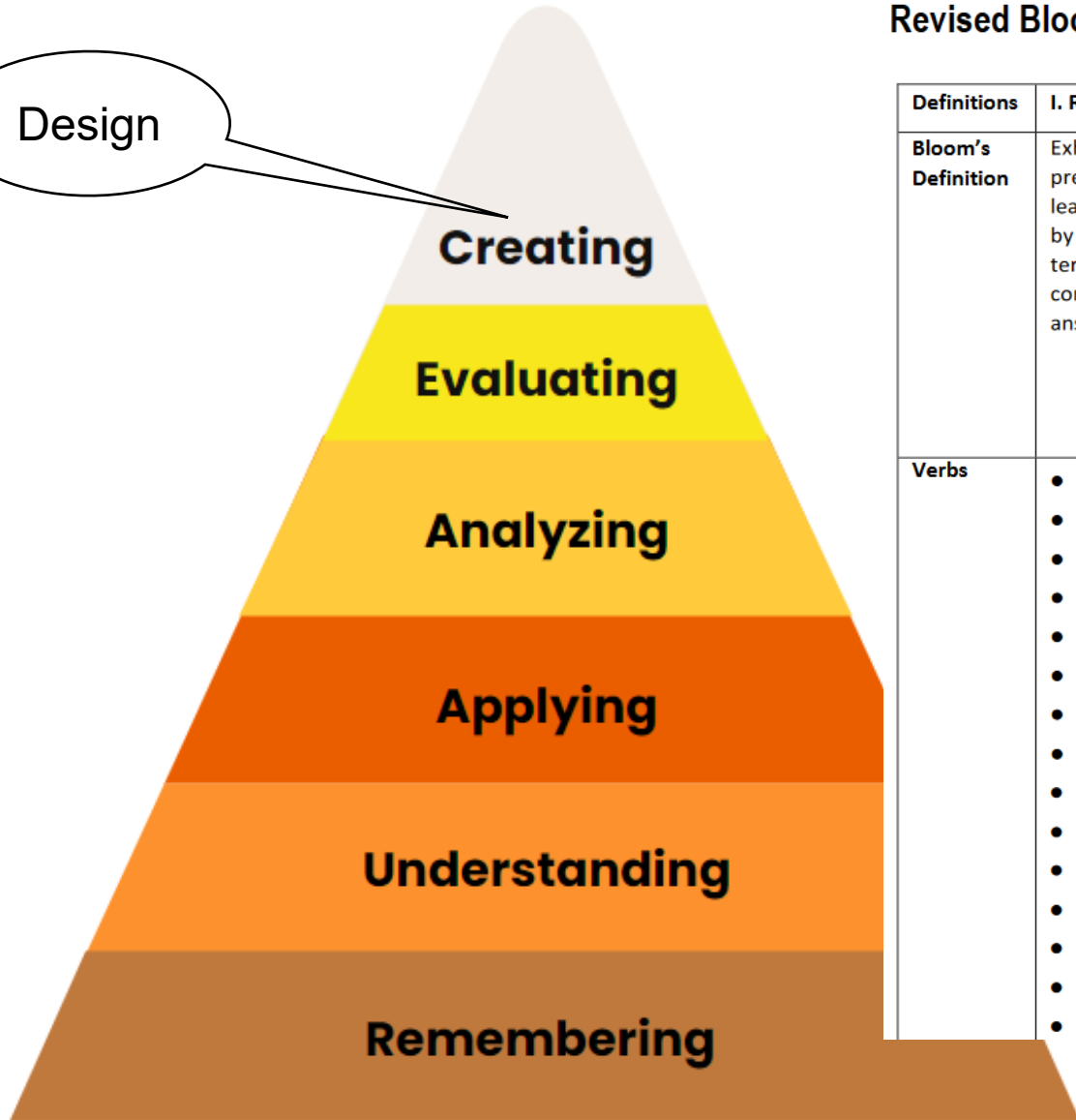
Learning outcomes

- What's in them
 - Action verb; Learning statement; criterion or specific skill
- Bloom's Taxonomy

Example Learning Outcome:

- Upon completing the requirements for the BS degree in mathematics, students (our graduates?) will be able to:
- **Design [action verb] predictive models using R [Learning statement] to make quantitative predictions [skill] from a dataset.**

Design



Revised Bloom's Taxonomy Action Verbs

Definitions	I. Remembering	II. Understanding	III. Applying	IV. Analyzing	V. Evaluating	VI. Creating
Bloom's Definition	Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers.	Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas.	Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations.	Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria.	Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.
Verbs	<ul style="list-style-type: none"> Choose Define Find How Label List Match Name Omit Recall Relate Select Show Spell Tell 	<ul style="list-style-type: none"> Classify Compare Contrast Demonstrate Explain Extend Illustrate Infer Interpret Outline Relate Rephrase Show Summarize Translate 	<ul style="list-style-type: none"> Apply Build Choose Construct Develop Experiment with Identify Interview Make use of Model Organize Plan Select Solve Utilize 	<ul style="list-style-type: none"> Analyze Assume Categorize Classify Compare Conclusion Contrast Discover Dissect Distinguish Divide Examine Function Inference Inspect List Motive Relationships Simplify 	<ul style="list-style-type: none"> Agree Appraise Assess Award Choose Compare Conclude Criteria Criticize Decide Deduct Defend Determine Disprove Estimate Evaluate Explain Importance Influence 	<ul style="list-style-type: none"> Adapt Build Change Choose Combine Compile Compose Construct Create Delete Design Develop Discuss Elaborate Estimate Formulate Happen Imagine Improve

Mathematics Major Example

Student Learning Outcomes:

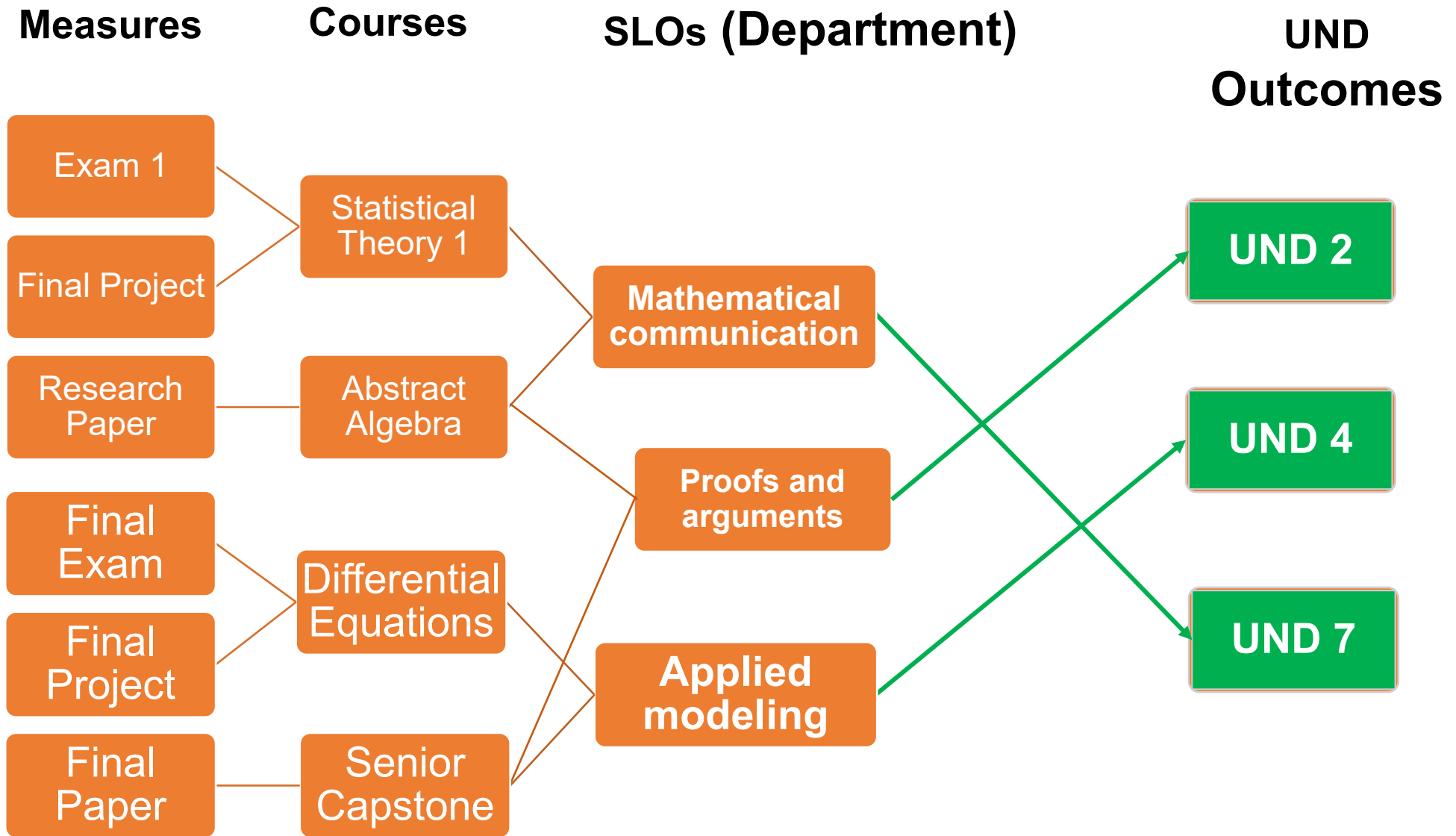
- **Working knowledge:** Students will demonstrate a working knowledge of topics from all major branches of mathematics.
- **Proofs and arguments:** Students will demonstrate the ability to determine the validity of a given argument, and be able to independently construct mathematical proofs.
- **Problem solving:** Students will demonstrate the ability to solve problems, including applications outside of mathematics.
- **Mathematical communication:** Students will demonstrate the ability to communicate mathematical ideas clearly.
- **Applied modeling:** Students will abstract real world problems and frame them through a mathematical lens.

(SLOs from the University of San Diego; <https://www.sandiego.edu/cas/math/curriculum/learning-outcomes.php>)

Mathematics Major Example

The Mathematics Department might take this approach:

- “Our goal is to have 80% of our graduates achieve the level of proficiency (score 2/3) for all department level learning outcomes.” --OR--
- “Upon graduating from UND with a BS degree in mathematics, we expect that 80% of our graduates have achieved at least the level of proficiency (score 2/3) for all department level learning outcomes.” --OR--
- “80% of students who graduate from UND’s Mathematics Department will achieve the level of proficiency in the mathematics department learning outcomes of working knowledge; proofs and arguments; problem solving; mathematical communication; and applied modeling.”
- **(Note: Scale: 0 – Not acceptable; 1 – Developing; 2 – Proficient; 3 – Exemplary)**





‘Closing the Loop’

- Identifying an Action Plan/strategies based on results and findings
- Focused on the ongoing, continuous improvement of student learning outcomes