STUDENT LEARNING OUTCOME ASSESSMENT

HANDBOOK

Academic Year
2024 - 2025

COCHISE COLLEGE

Contents

Introduction

The Higher Learning Commission requires postsecondary institutions to meet four quality standards: 1. Mission, 2. Integrity: Ethical and Responsible Conduct, 3. Teaching and Learning for Student Success, and 4. Sustainability: Institutional Effectiveness, Resources, and Planning. This document provides guidelines and processes for Student Learning Outcomes and Assessment (SLOA) addressed primarily in HLC Criterion 3.

Program Assessment is the systematic collection of information about student learning, using the time, knowledge, expertise, and resources available to inform decisions that affect student learning. Assessing student learning outcomes allows programs/departments to make and communicate evidence-based decisions regarding the effectiveness of instruction and the curriculum.

CRITERION 3:

TEACHING AND LEARNING FOR STUDENT SUCCESS.

The institution demonstrates responsibility for the quality of its educational programs, learning environments and support services, and it evaluates their effectiveness in fulfilling its mission through procedures designed to promote continuous improvement and student success. The rigor and quality of each educational program is consistent regardless of modality, location

Program Assessment involves:

- **Setting Explicit Outcomes:** What do you want students to be able to do? What knowledge and skills must students have on completion of the program?
- **Gathering Information:** How well are students attaining their goals, and what influences their learning?
- **Taking Action:** Assessing the gathered information to improve student learning through specific action steps.

Student Learning Outcomes Assessment (SLOA)

Mission: To review and assess student learning and facilitate continuous data-driven improvements that enhance the learning, development, and success of students in alignment with the vision, mission, and values of Cochise College.

SLOA provides a foundation for continuous, long-term, intra-programmatic improvement. It is not intended for use in making comparative or evaluative judgments across departments or programs.

Guiding Principles of SLOA:

- Serves as a means for improving student learning and success.
- Defines clear, meaningful learning outcomes that are measurable.
- Provides accountability for students' learning.
- Enhances instruction and curriculum.

SLOA Committee

- The purpose of the SLOA committee is to review and recommend policies and procedures regarding program assessment, including co-curricular activities. The General Education Assessment Committee oversees general education activities.
- SLOA committee meets monthly during the academic year.
- SLOA Committee activities include:
    - Participation in professional development activities as needed to understand the assessment process and the role of SLOA committee membership.
    - Provide support for program assessment team leaders and faculty/staff in the development, implementation, use, and dissemination of student learning outcomes assessments.
    - Assist in facilitating activities on Assessment Day.
    - Review program assessment documents and assist faculty with any revisions of documents to include curriculum maps, rubrics, assessment plans, and assessment reports.
    - Communicate assessment processes, deadlines, etc., within your academic division.
    - Promote and support student learning outcomes assessment activities with faculty and the SLOA committee.
    - Keep abreast of the professional literature and accreditation standards.
    - Attend and participate in scheduled SLOA meetings prepared with feedback and questions.

Student Learning Outcomes Assessment Committee

Membership	Representative
Faculty Representatives	
Chair	**Cara Elkins**
Allied Health & Nursing	Kendra Kaiser
Business & Technology	Dan Guilmette, Eric Malm
Career & Technical Education	Alan Anderson
First Responders	Eric Bailey
Liberal Arts	Jennifer Kennedy, Callie Hutchison
Math & Science	Joann Deakin, Lloyd Moyo
Military Programs	Cullen Scarborough, Barbara Lopez
Outreach (Early College)	Brenda Kurtz
General Education Representative(s)	TBD
Associate Faculty Representative(s)	Alicia Rackers
Leadership Representatives	
Dean of Academic Affairs and ALO	Sheena Brown
Curriculum Committee Chair	Angela Garcia
VP Student Services	Dana Horne
Executive Director of Institutional Research	Janelle Simpson
Executive Director of First Responders Academy	Eric Brooks
Director, Library Services	Karly Scarborough
Dean, Business and CTE	Quintin Molina
Dean, Math & Science	Thomas Guetzloff
Faculty Support Representatives	
Instructional Designer	Wendy Ashby
Assessment & Program Review Manager	Jessica Rzepecki
Curriculum Manager	Melissa Faglie

Comprehensive Assessment of Student Learning

Program-level learning outcomes (PLLOs) are general and measurable.

- PLLOs clearly and appropriately meet the objectives and mission of the program and communicate to students what they will be able to do after completing their program.
- PLLOs demonstrate alignment of program learning outcomes with the institution's mission. They are written more broadly than CLLOs and can be addressed in multiple ways throughout the curriculum.
- PLLOs reflect end competencies as introduced, practiced, and assessed during the course of obtaining a certificate or degree.
- PLLOs must be meaningful, measurable, and guide program planning, improvement, pedagogy, and practice decisions.
- A common issue is generating too many program-level learning outcomes. Aim for a maximum of 5 - 7 PLLOs.
- PLLOs can be assessed using both direct and indirect assessments as appropriate.

Course-level learning outcomes (CLLOs) are specific and measurable.

- CLLOs are more specific than PLLOs and are a formal statement of what students are expected to learn in a course. Course learning outcome statements refer to, for example, knowledge, practical skills, areas of professional development, attitudes, and higher-order thinking skills: competencies relevant to a single course.
- CLLOs must be consistent across all modalities and sections of the same course. *NB: Syllabi should be reviewed to ensure course outcomes, standards, and rigor are consistent.*
- A completed curriculum map will align CLLOs to PLLOs, indicating how each CLLO maps to one or more PLLOs.

Student Learning Outcomes (SLOs)

- SLOs are standalone skill competencies students obtain at any point during the program or course. They are assessed at the unit/module, lesson, and/or activity level.
- A sampling of targeted SLOs is the focus of and basis for program assessment activities.
- SLOs document how learning activities map to CLLOs.

General Education Learning Outcomes

- Cochise College has five established General Education Learning Outcomes. These outcomes may be part of designated general education courses or embedded within the degree program. Core courses that also fulfill general education requirements should be noted on the curriculum map, indicating the appropriate course-level learning outcome(s).

- Students fulfill their General Education requirements by showcasing competency in five distinct focus areas.

    1. **Communication:** Apply writing and speaking skills effectively.
    2. **Creativity:** Develop analytic insight with unique expression.

3. **Critical Thinking:** Apply logical, analytical, analogical, and/or reflective reasoning.
4. **Diverse and Global Perspectives:** Recognize the diversity of the human experience.
5. **Data Literacy:** Use digital tools and resources to gather and evaluate information

Co-curricular Learning Outcomes

- Co-curricular activities are:
    - Activities, programs, and learning experiences that complement, support, or enhance the academic experience to reinforce academic concepts and skills.
    - Ungraded and do not earn academic credit. They may occur outside of regular college hours, and external organizations may operate them.
- Co-curricular opportunities may include (for example) student newspapers, musical performances, art shows, debate competitions, mathematics, robotics, engineering teams and contests, student leadership, civic engagement, field trips, and study abroad.
- The Co-Curricular Subcommittee is working to define co-curricular activities at Cochise College and establish learning outcomes for assessment purposes.

Types of Assessment

Direct Assessment

Assessment of student work samples to measure performance on learning outcomes and required performance standards.

Examples: Pre/Post-tests, assignments, essays, tests or quizzes, projects, portfolios, skill demonstrations, and discussion board posts.

Indirect Assessment

Gathering information through means other than looking at student work samples and focusing on students' opinions or thoughts about their knowledge, skills, attitudes, or perceptions.

Examples: Student surveys (pre and post), focus groups, employer surveys, exit surveys, and student interviews.

Formative Assessment

Aims to improve teaching and/or learning for both student and instructor by identifying misconceptions, struggles, and learning gaps and assessing how to close those gaps. It encourages students to take ownership of their learning, particularly when they understand that the goal is to improve learning, not simply apply a grade. Formative assessment provides information about:

- Program-level learning outcome attainment.
- Identifies if changes are needed in instruction or curriculum to improve student learning.
- Identifies student strengths and/or weaknesses.

Examples: In-class discussions, low-stakes group work, weekly quizzes, 1-minute reflection writing assignments, and surveys.

Summative Assessment

Evaluates student learning, knowledge, proficiency, or success after an instructional period (i.e., unit, course, program). Summative assessments are formally graded and are administered to evaluate whether a particular outcome was achieved and to provide information about the following:

- Evaluation and accountability within programs.
- Program-level decision-making and planning.
- Meet the demands of accrediting bodies, state or federal agencies.

Examples: Exams, standardized tests, final projects, essays, presentations, and reports.

Student Learning Outcomes are Specific, Measurable, Actionable, Relevant, and Timely (SMART)

Student learning outcomes are the desired observable primary skills, behaviors, abilities, expertise, and proficiencies the learner will be able to demonstrate as a result of their participation in learning activities. The emphasis of a student learning outcome focuses on what the learner can be observed doing with knowledge, information, skills, etc., not just exposure to (or participation in) assignments or possession of content.

- Thoughtfully considering the measurable, observable outcome of a learning activity (backward design) helps create a more effective pedagogical strategy and assessment process.
- Vaguely defined learning outcomes lead to confusion for students and are difficult, if not impossible, to measure.
    - Avoid vague action verbs such as *demonstrate* or *understand*. Select an action verb that illustrates *how* students may demonstrate (e.g., define, predict, explain, compute, critique) or understand (e.g., explain, identify, discuss, compare, review).
- Effective learning outcomes share a standard format with four key components, easily remembered using ABCD:
    - An *audience* (i.e., the learner - this is often implied).
    - A *behavior* (i.e., observable, student demonstrated action or performance of knowledge, skill, attitude, behavior).
    - A *condition* (i.e., after completing [activity], or using a checklist, or within 60 seconds).
    - A *degree* (i.e., the metric for success indicating expected accuracy or level of achievement).

Bloom's Taxonomy

Bloom's Taxonomy categorizes different levels of cognitive learning and knowledge dimensions through six domains that provide a framework for determining and designing learning outcomes, using verbs to describe cognitive processes. Using Bloom's Taxonomy helps create learning outcomes appropriate for assessing student learning and to ensure that instruction and assessment are aligned with the learning outcomes. The six domains are arranged hierarchically, ordered from simple to complex and concrete to abstract (Table 1). A comparison between effective and less effective learning outcomes is provided in Table 2.

To foster deep understanding, critical thinking, and the ability to apply knowledge meaningfully, a mix of higher-order and lower-order action verbs should be used, with an emphasis on higher-order skills as students advance through their education, whether in a certificate, 2-year, or 4-year degree program.

- Refer to Appendix 1 to learn more about Bloom's Taxonomy: A Model of Learning Objectives.
- Refer to Appendix 2 to learn more about Measurable Outcome Verbs in the Cognitive, Psychomotor, and Affective Domains.
- Refer to Appendix 3 for guidance on Cochise College Standard Descriptions for 100-, 200-, 300-, and 400-level Courses.

Table 1. Bloom's Taxonomy Domains are Ordered from Simple to Complex and Concrete to Abstract

Simple

Complex

Domain	Description
Remember	Retrieving or recognizing relevant knowledge from memory
Understand	Constructing meaning from different kinds of messages, often instructional (oral, written, or graphic communication).
Apply	Carrying out or using a procedure in a given situation.
Analyze	Breaking material down into constituent parts and detecting how the parts relate to one another and their overall purpose.
Evaluate	Making judgements based on criteria and standards.
Create	Putting elements together to form a novel, coherent whole or make an original product.

Concrete

Abstract

Table 2. Comparison Examples of Poorly Written and Well-Written Learning Outcomes

Ineffective Learning Outcomes Are:		Effective Learning Outcomes Are:
Vague Students will learn the programming language Python.	→	**Clear & Specific** On successful completion of this course, students will be able to use the programming language Python to complete a data mining analysis with a minimum of 80% accuracy.
Unmeasurable Students will know the elements from the periodic table	→	**Measurable** On successful completion of this course, students will be able to identify and classify the first twenty elements from the periodic table with 90% accuracy.
Verbose Students will be able to apply one of the many theories of social psychology and apply those theories to a number of real-world situations.	→	**Concise** On successful completion of this course, students will be able to select and accurately apply one theory of social psychology to analyze real-world situations.

Program Assessment Cycle:

The 3-year program assessment cycle is a process of continuous improvement and consists of the following components:

- **Defined Learning Outcomes:** Articulated program-level learning outcomes that are measurable and communicate behaviors students are expected to demonstrate on successfully completing their program.
- **Curriculum Map & Assessment Plan:** Alignment of CLLOs with PLLOs, documented learning activities, valid metrics and assessment tools to measure how well students have achieved the defined outcomes.
- **Assessment:** Students complete the designated learning activities to provide achievement data for learning outcome assessment. Achievement is measured using appropriately designed rubrics (or other assessment tools) and setting student success proficiency levels and benchmark targets.
- **Analysis of Assessment Results:** Student assessment data are analyzed to identify strengths and areas needing improvement.
- **Comprehensive Report:** Documented action steps to achieve desired results and to demonstrate continuous program improvement.
- **Repeat Cycle:** Improvements are implemented, and the cycle is repeated for continuous review and improvement.

Program Assessment - Submission Components

Year 1 – Planning Year

CURRICULUM MAP

- Complete the template provided
  - Identify courses with 1) co-curricular activities and 2) General Education learning outcomes embedded within core courses. For both interim and final reports, additional details will be necessary; follow-up discussions will assist in determining subsequent actions.
- Only one curriculum map is required when courses and outcomes are shared between a degree program and related certificate program(s). Certificate program outcomes should be the same as (or a subset of) the degree program outcomes. Use an asterisk on the curriculum map to denote courses and outcomes in the certificate program.
- CLLOs are aligned with PLLOs for required (core) courses only. Courses that not all students take (e.g., electives) are not included in the curriculum map.
- Include the specific CLLO(s) that align with the corresponding PLLO on the curriculum map. Not all CLLOs will align with all PLLOs. However, if a core course does not have any learning outcomes that align with at least one PLLO, review the course and either revise the outcomes or reconsider the course as a requirement for the program.
- Students must have the opportunity for PLLOs to be introduced and practiced to attain proficiency before assessment activities are conducted. While it is understood that each PLLO may be assessed in

numerous places across the curriculum, it is recommended that only one assessment point is reported per PLLO (two if you include an indirect assessment).

- **Introduced:** Introduce basic knowledge, facts, or concepts.
- **Practiced:** Students have the opportunity to develop and strengthen their knowledge and skills. Students fully understand the material but may need support applying their knowledge or skills.
- **Assessed:** Students demonstrate mastery of the knowledge, skills, or concepts necessary to accomplish the outcomes. Students can apply their knowledge independently.

PROGRAM-LEVEL LEARNING OUTCOMES

- Review all PLLOs to ensure they meet the mission of the program, are measurable, and are written effectively. There should be no more than seven PLLOs per program.
- Complete the curriculum map aligning CLLOs from core courses with PLLOs.
    - Check if any adjustments need to be made to the map, the curriculum, and/or the program-level or course-level learning outcomes.
    - Work with faculty support to review proposed changes before submission to the curriculum committee.

ASSESSMENT PLAN

- Complete Part A of the template provided. Part B of the template will be completed and submitted with the interim and comprehensive reports.
- All Program/Department learning outcomes are assessed within one 3-year SLOA cycle.
- Assessment methods, scoring, proficiency, and performance targets are included in the assessment plan.
- Courses selected to assess program outcomes taught in different modalities (online, face-to-face, dual enrollment, hybrid, etc.) should compare student learning outcomes in the different modalities.
- Faculty/staff involved in the assessment tasks are documented.
- Internal review processes have been developed with the division dean, and are documented.

COURSE-LEVEL LEARNING OUTCOMES ASSESSMENT

- Course-level learning outcomes should be reviewed within the relevant program or department.
  Detailed results of CLLO assessments are not submitted to the SLOA committee but are summarily documented on the assessment plan. Programs/departments are expected to maintain complete documentation of CLLO assessment processes and outcomes.
    - This process is essential to informing the curriculum mapping exercise and ensuring the CLLOs reflect the purpose of the course, are written in the correct format, and are measurable. The Faculty Support Center is available to help review CLLOs.

ASSESSMENT TOOLS

- Develop appropriate rubrics and/or other assessment tools for all assessments.
    - The Faculty Support Center is available to help with their development.

- AAC&U Value Rubrics provide a resource for rubric development and serve as a valuable tool for assessing and improving student learning outcomes, promoting consistency and transparency in assessment practices, and supporting the overall quality enhancement of programs.

Year 2 - Interim Report

- Complete and submit Part B of the Assessment Plan for PLLOs assessed in year two.
- Using the Interim Report Template, provide a brief narrative explanation to explain year two results.

Year 3 - Comprehensive Report

- Complete Part B of the Assessment Plan for PLLOs assessed in year three.
- Use the template provided to submit a report narrative:
    - After assessment data collection, analyze performance target data and student achievement of the learning outcomes.
    - Based on the analysis of the assessment data, identify strengths or areas needing improvement within the program, courses, or learning activities.
    - Once areas of improvement are determined, discuss how these areas of improvement will enhance student learning and support student success
    - Identify action(s) needed to address areas of improvement and discuss how these actions will be achieved. Provide a timeline of specific improvement actions, thereby documenting the process of continuous program improvement.

        Example areas of improvement *could* include; modifications to the curriculum or the program, changes in instructional practice, course modality, scheduling, pre-requisites, and/or professional development needs, resources/equipment needed, and/or staffing needs.
    - Explain how (and when) the identified areas of improvement will be evaluated for the successful improvement of student learning outcomes.

Guidelines for SLOA Committee Review

Assessment Review Criteria **Year 1 submissions**	**Criteria will be assessed as:** **Met:** Criterion is complete and communicated clearly **Almost Met:** Criterion needs more detail or clarification **Not Met**: Criterion has not been met.
A. Curriculum Map (program level) 1. The curriculum mapping process: a. Supports curriculum design and helps faculty create a program assessment plan that provides information about student attainment of learning outcomes at the program level. b. Provides evidence of alignment between the program mission, PLLOs, and CLLOs. Alignment may also incorporate professional and/or industry standards. c. Indicates 1) direct and/or indirect measures of assessment, 2) identifies co-curricular activities (if present), and 3) identifies embedded general education learning outcomes aligned with core courses of the program	
B. Program-Level Learning Outcomes 1. PLLOs reflect the program's purpose, current practices, standards, and expectations in the field of study. a. Review PLLOs to ensure alignment with current industry and/or professional standards. This may include researching industry standards, professional organizations, and/or similar programs at other colleges. 2. PLLOs are SMART (Specific, Measurable, Actionable, Relevant and Timely), share a standard format, and reflect the general competencies to be attained by students. a. The learning outcome format follows recommended guidelines. Action verbs are appropriate for the course level, content, and industry/field standards.	
C. Assessment Plan 1. Assessment Plan – Part A is complete. a. PLLOs to be assessed in years 2 and 3 are clearly identified. b. Courses, modality, CLLO aligned to PLLO provided c. Assessment methods, scoring, proficiency requirements, and performance targets are included in the assessment plan. d. Assessment is noted as Direct or Indirect e. Responsibilities have been assigned to individuals involved in data collection, analysis, reporting, and action planning.	
D. Assessment rubric (and/or other measurement tools) submitted for review	

Assessment Review Criteria **Interim Report (year 2)**	**Criteria will be assessed as:** **Met:** Criterion is complete and communicated clearly **Almost Met:** Criterion needs more detail or clarification **Not Met**: Criterion has not been met.
A. Assessment Plan 1. Data required for year 2 on the Assessment Plan Part B is complete.	
B. Assessment Narrative 1. A narrative explanation is provided to explain year 2 results, including: a. Discussion of student achievement of the program-level learning outcomes b. Discussion of student performance (proficiency target data) c. Considering a & b, action steps being taken to enhance student learning and support student success are discussed.	

Assessment Review Criteria **Comprehensive Report (year 3)**	**Criteria will be assessed as:** **Met:** Criterion is complete and communicated clearly **Almost Met:** Criterion needs more detail or clarification **Not Met**: Criterion has not been met.
A. Assessment Plan 1. Data required for year 3 on the Assessment Plan Part B is complete.	
B. Assessment Narrative 1. The comprehensive report documents: a. Student achievement of the learning outcomes and student performance, assessed in years 2 and 3. b. Strengths, successes and areas needing improvement within the program, courses, or learning activities, based on the analysis of the assessment data are discussed. c. Identified areas of improvement to enhance student learning and support student success are discussed. d. Actions needed to address areas of improvement and discuss how these actions will be achieved are identified. A timeline of specific improvement actions provided. e. Details of evaluation processes for identified areas of improvement for the successful improvement of student learning outcomes provided.	

Student Learning Outcomes Assessment Schedule

Business Technology

DEAN: QUINT MOLINA

Program	Cohort	Course Prefixes	Awards
Agriculture	3	AGR	16-30C-CRSC, 16-30C-HCSC, AAS-AGRC, 16-30C-ASC, AAS-AGRA
Automotive	2	AUT	1-15C-ATCD, 1-15C-AUTF, 16-30C-ATC, AAS-ATC
AWS Cloud	-	CLD	1-15C-CDLF, 1-15C-CLDA
Building & Residential Construction	3	BCT	16-30C-HVAC, 16-30C-HVAC, 31-44C-RCC, 31-44C-RCC AAS-RCT
Business	3	BUS	16-30C-ENTC, 16-30C-TAXP AAS-BMT, ABUS-BUSG BAS-LMO
Computer Information Systems	2	CIS	AA-CSC, AAS-CIS, AAS-CPG/CPGP (Programming), AAS-CPG/GPGV (Virtual Developer), AS-CSC
Culinary	1	CUL	1-15C-CULF, 16-30C-CULA, 16-30C-CULB, 16-30C-CULS
Cybersecurity	2	CYB	AAS-CYB
Drafting	1	DFT	16-30C-CAD, 16-30C-GCAD
Economics	-	ENC	
Engineering	3	EGR	AS-EGR
General Technology	-	GTC	
Google IT Support Professional	-	GOO	1-15C-GITP
Network Technology	2	NWT	16-30C-LSA, AAS-NWT
Professional Flight Technology	1	AVT, PFT	AAS-PPT/PPTC, AAS-PPT/PPTF, AAS-PPT/PPTM
Virtual Reality Development	2	VRD	16-30C-VRD
Welding	2	WLD	1-15C-WFGM, 1-15C-WLDF, 16-30C-AEWT, 16-30C-GWLD, 16-30C-WMS, 16-30C-WPF, 16-30C-WSM, AAS-WLD

First Responders

EXECUTIVE DIRECTOR: ERIC BROOKS

Program	Cohort	Course Prefixes	Awards
Administration of Justice	3	AJS	1-15C-COC, AA-AJS
Fire Science	3	FST	16-30C-FST, AAS-FST
Law Enforcement	2	LEO	16-30C-LEOC, AAS-LEO

Health Sciences

DEAN: BETH HILL

Program	Cohort	Course Prefixes	Awards
AGS – Allied Health	3		AGS-AHS
Health Technology: Certified Nursing Assistant	1	HLT	1-15C-CNA
Health Technology: Dental Assistant Technology	3	HLT	16-30C-DENA
Health Technology: EKG Technician	1	HLT	1-15C-EKGT
Health Technology: Medical Assistant	1	HLT	16-30C-MEDA
Health Technology: Medical Billing & Coding	1	HLT	16-30C-MBC
Health Technology: Phlebotomy Technician	1	HLT	1-15C-PTTC
Behavioral Health Sciences	2	BHS	1-15C-BHS, 16-30C-BHSA
Emergency Medical Technician	1	EMT	1-15C-EMT
Nursing	3	NUR	31-44C-PN, AAS-NUR, AAS-NUR/NURA, BAS-RN to BNS
Paramedicine	1	PMD	45+C-PAR, AAS-PAR

Liberal Arts

DEAN: ANGELA GARCIA

Program	Cohort	Course Prefixes	Awards
Fine Arts	2	ART	AA-ARTF
Communication	3	COM	AA-LBS/LBSC (Communication)
Counseling & Personal Development	2	CPD	
Digital Media Arts	3	DMA	AAS-DMA (Digital Photo/Video), AAS-DMA (Graphic Design)
Early Childhood Education	1	ECE	16-30C-ECEC, AA-ECE, AAS-ECE
Elementary Education	1	EDU	AAEE-EED, 16-30C-PARA
English	3	ENG	AA-LBS/LBSE (English)
English as a Second Language	2	ESL	
Humanities	3	HUM	AA-LBS/LBSH (Humanities)
Journalism	3	JRN	AA-LBS/LBSJ (Journalism)
Music	1	MUS	AA-MUS
Philosophy	3	PHI	AA-LBS/LBSP (Philosophy)
Reading	2	RDG	
Sign Language	2	ASL	
Spanish	2	SPA	
Theater Arts	1	THE	AA-THE

Military and Workforce Programs

DEAN: CULLEN SCARBOROUGH

Program	Cohort	Course Prefixes	Awards
Commercial Driver License	1	CDL	1-15C CDL
Military - IOS	1	IOS	AAS-IOST
Military - Mist	1		AAS-MIST
Military - UAV	1	UAS	AAS-UAVO, AAS-UAVT

Science & Math

DEAN: THOMAS GUETZLOFF

Program	Cohort	Course Prefixes	Awards
Anthropology	3	ANT	AA-SBS/SBSA (Anthropology)
Biological Sciences	3	BIO	AS-BIO/BIOA (Human Biology), AS-BIO/BIOB (Biological Sciences), AS-BIO/BIOE (Ecology & Evolutionary Sciences), AS-BIO/BIOM (Microbiology)
Chemistry	2	CHM	AS-CHM
Geology	2	GLG	
Health & Physical Education	3	HPE	AA-HPES
History	3	HIS	AA-SBS/SBSH (History)
Human Geography	2	GEO	
Mathematics	2	MAT	AS-MAT
Physics	2	PHY, AST	AS-PHY/PHYA (Astronomy) AS-PHY/PHYS (Physical Science), AS-PHYP (Physics)
Physical Geography	2	GEO	
Political Science	3	POS	AA-SBS/SBPS (Political Science)
Psychology	3	PSY	AA-SBS/SBSP (Psychology)
Sociology	3	SOC	AA-SBS/SBSS (Sociology)

Student Learning Outcomes Assessment – Cohort Timeline

Cohort	2024	2025	2026	2027	2028	2029
1	**Fall – Planning** - Review PLLOs - Create curriculum map, review with Dean - Create Assessment plan - Submit all documents to SLOA committee - Develop assessment tools.	- Complete assessment tool development - Collect year 1 SLOA data - SLOA Interim report	- Collect year 2 SLOA data - Comprehensive report to SLOA committee - Submit curriculum changes (after feedback from SLOA)	Repeat Cycle starting with Fall planning		
2	- Submit Curriculum Map - Review learning outcomes & identify any necessary changes - Develop Assessment Tools	**Fall – Planning** - Review PLLOs - Create/revise curriculum Map. - Create assessment plan - Submit all documents to SLOA committee - Develop assessment tools	- Complete assessment tool development - Collect year 1 SLOA data - SLOA Interim report	- Collect year 2 SLOA data - Comprehensive report to SLOA committee - Submit curriculum changes (after feedback from SLOA committee)	Repeat Cycle starting with Fall planning	
3	- Submit Curriculum Map - Review learning outcomes & identify any necessary changes - Develop Assessment Tools	- Review learning outcomes & identify any necessary changes - Develop assessment tools	**Fall – Planning** - Review PLLOs - Create/revise curriculum Map. - Create assessment plan - Submit all documents to SLOA committee - Develop assessment tools	- Complete assessment tool development - Collect year 1 SLOA data - SLOA Interim report	- Collect year 2 SLOA data - Comprehensive SLOA report to SLOA committee - Submit curriculum changes (after feedback from SLOA)	Repeat Cycle starting with Fall planning

Student Learning Outcomes Assessment Process Timeline

Year	Month	Task
1	Aug - Dec	To Complete: 1. Curriculum Map 2. Assessment Plan 3. Begin developing assessment tools (submit in years 2 and 3) **Submissions Due:** End of fall semester
	Jan - April	Submissions reviewed by SLOA committee
	April - May	SLOA feedback returned to programs/departments
2	Aug - Nov	Programs/departments work on assessment (as per assessment plan)
	Sept.	Assessment Day (annual)
	Dec.	Submit Year 2 Report (end of fall semester)
	Jan - Apr	SLOA committee reviews Year 2 report
	Apr - May	SLOA feedback returned to programs/departments
3	Aug - Nov	Programs/departments work on assessment (as per assessment plan). Complete Comprehensive (Year 3) Report
	Sept.	Assessment Day (annual)
	Dec.	Submit Year 3 Report (end of fall semester)
	Jan - Apr	SLOA committee reviews Year 3 report
	Apr-May	SLOA feedback returned to programs/departments
	NB: Incorporate the comprehensive (or latest) SLOA report into the Comprehensive Academic Program Review Report (year 4 of the APR cycle). This will be reviewed by EVPA and presented to AdCab.	

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Appendix 1

A Model of Learning Objectives

based on

A Taxonomy for Learning, Teaching, and Assessing:
A Revision of Bloom's Taxonomy of Educational Objectives

Among other modifications, Anderson and Krathwohl's (2001) revision of the original Bloom's taxonomy (Bloom & Krathwohl, 1956) redefines the cognitive domain as the intersection of the Cognitive Process Dimension and the Knowledge Dimension. This document offers a three-dimensional representation of the revised taxonomy of the cognitive domain.

Although the Cognitive Process and Knowledge dimensions are represented as hierarchical steps, the distinctions between categories are not always clear-cut. For example, all procedural knowledge is not necessarily more abstract than all conceptual knowledge; and an objective that involves analyzing or evaluating may require thinking skills that are no less complex than one that involves creating. It is generally understood, nonetheless, that lower order thinking skills are subsumed by, and provide the foundation for higher order thinking skills.

The Knowledge Dimension classifies four types of knowledge that learners may be expected to acquire or construct—ranging from concrete to abstract (Table 1).

Table 1. The Knowledge Dimension – major types and subtypes

concrete knowledge → abstract knowledge			
factual	**conceptual**	**procedural**	**metacognitive***
knowledge of terminology knowledge of specific details and elements	knowledge of classifications and categories knowledge of principles and generalizations knowledge of theories, models, and structures	knowledge of subject-specific skills and algorithms knowledge of subject-specific techniques and methods knowledge of criteria for determining when to use appropriate procedures	strategic knowledge knowledge about cognitive tasks, including appropriate contextual and conditional knowledge self-knowledge

(Table 1 adapted from Anderson and Krathwohl, 2001, p. 46.)

*Metacognitive knowledge is a special case. In this model, "metacognitive knowledge is knowledge of [one's own] cognition and about oneself in relation to various subject matters . . . " (Anderson and Krathwohl, 2001, p. 44).

This taxonomy provides a framework for determining and clarifying learning ***objectives***.
Learning ***activities*** often involve both lower order and higher order thinking skills as well as a mix of concrete and abstract knowledge.

The Cognitive Process Dimension represents a continuum of increasing cognitive complexity—from lower order thinking skills to higher order thinking skills. Anderson and Krathwohl (2001) identify nineteen specific cognitive processes that further clarify the scope of the six categories (Table 2).

Table 2. The Cognitive Processes dimension — categories & cognitive processes and alternative names

lower order thinking skills → higher order thinking skills

remember	understand	apply	analyze	evaluate	create
recognizing • identifying recalling • retrieving	interpreting • clarifying • paraphrasing • representing • translating exemplifying • illustrating • instantiating classifying • categorizing • subsuming summarizing • abstracting • generalizing inferring • concluding • extrapolating • interpolating • predicting comparing • contrasting • mapping • matching explaining • constructing models	executing • carrying out implementing • using	differentiating • discriminating • distinguishing • focusing • selecting organizing • finding coherence • integrating • outlining • parsing • structuring attributing • deconstructing	checking • coordinating • detecting • monitoring • testing critiquing • judging	generating • hypothesizing planning • designing producing • constructing

(Table 2 adapted from Anderson and Krathwohl, 2001, pp. 67–68.)

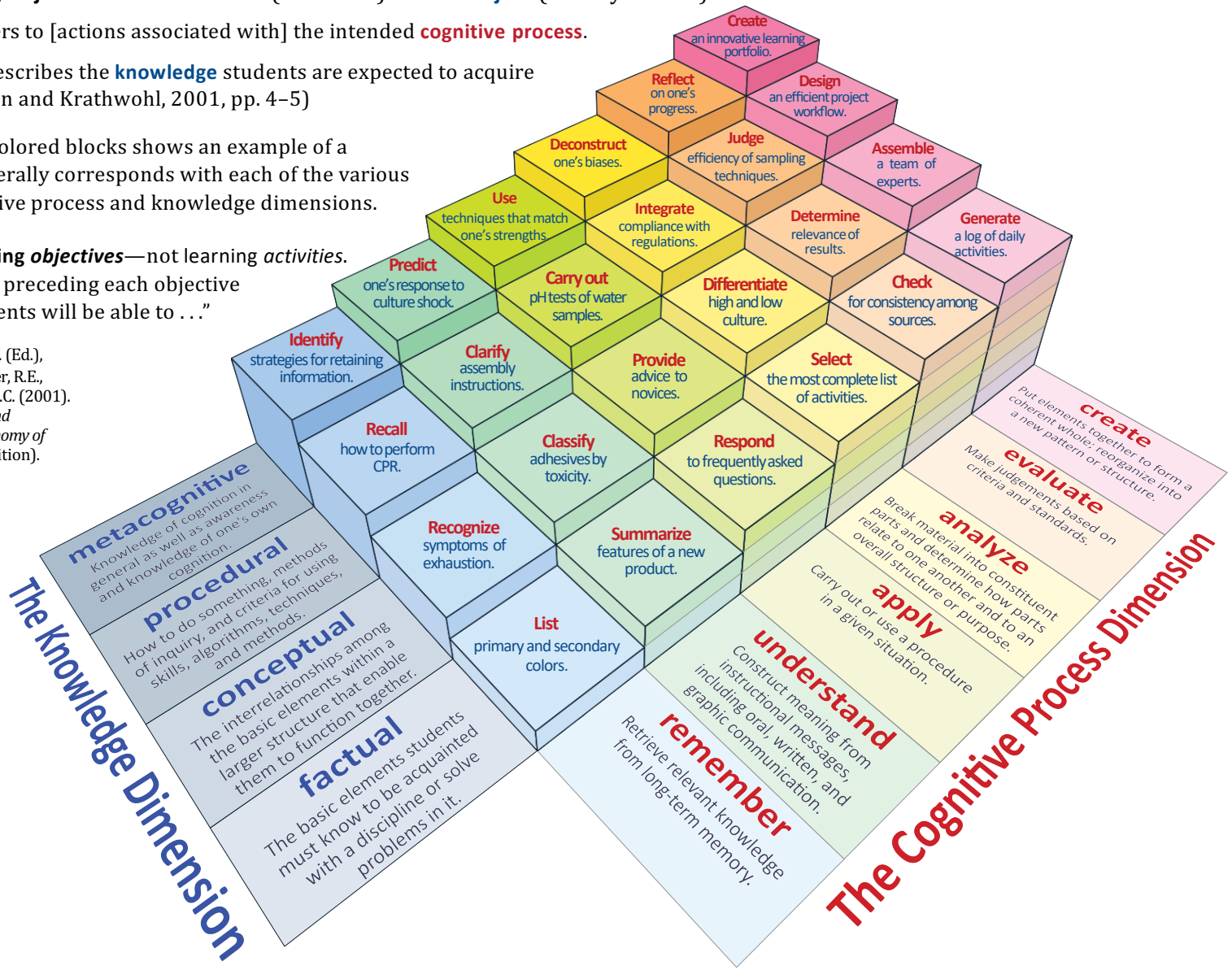
A statement of a **learning objective** contains a **verb** (an action) and an **object** (usually a noun).

- The **verb** generally refers to [actions associated with] the intended **cognitive process**.
- The **object** generally describes the **knowledge** students are expected to acquire or construct. (Anderson and Krathwohl, 2001, pp. 4–5)

In this model, each of the colored blocks shows an example of a learning objective that generally corresponds with each of the various combinations of the cognitive process and knowledge dimensions.

Remember: these are **learning *objectives***—not learning *activities*. It may be useful to think of preceding each objective with something like: "Students will be able to . . ."

*Anderson, L.W. (Ed.), Krathwohl, D.R. (Ed.), Airasian, P.W., Cruikshank, K.A., Mayer, R.E., Pintrich, P.R., Raths, J., & Wittrock, M.C. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's Taxonomy of Educational Objectives* (Complete edition). New York: Longman.



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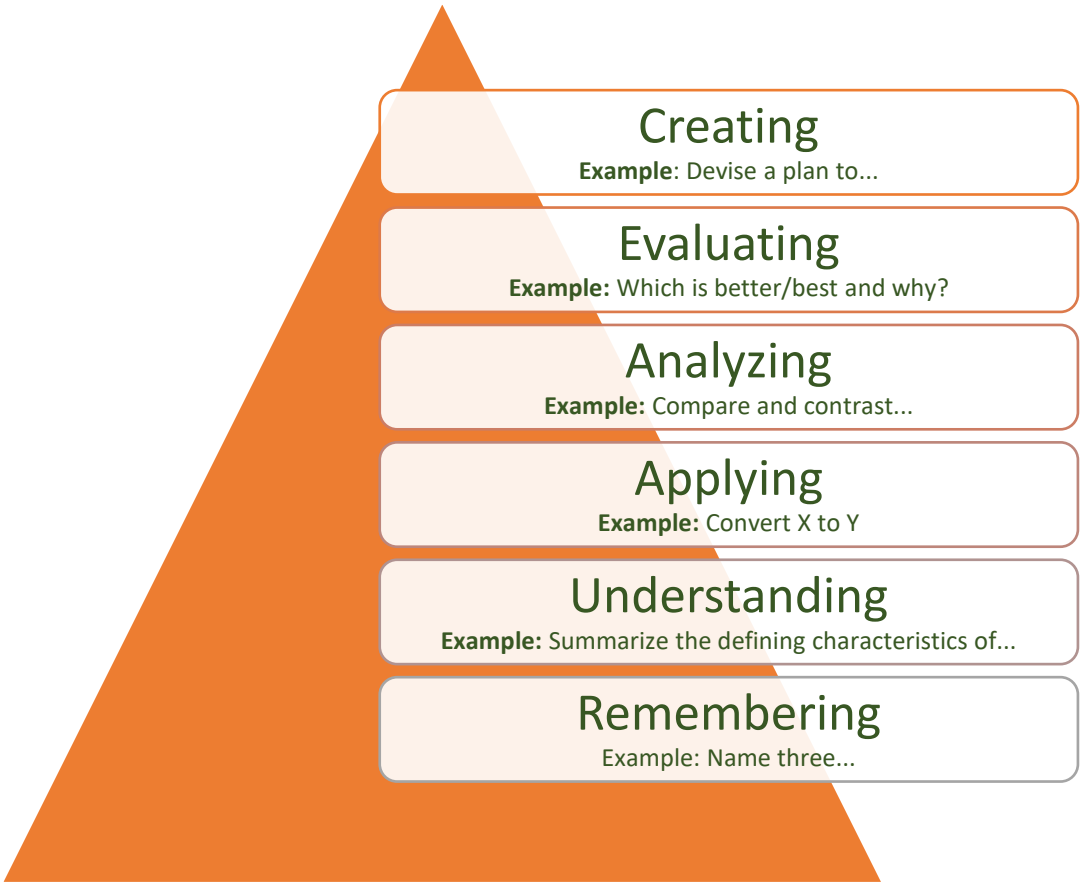
Appendix 2

Measurable Outcome Verbs - Cognitive Domain

Bloom, Anderson and Krathwohl 2001 – Revised Cognitive Taxonomy of Learning



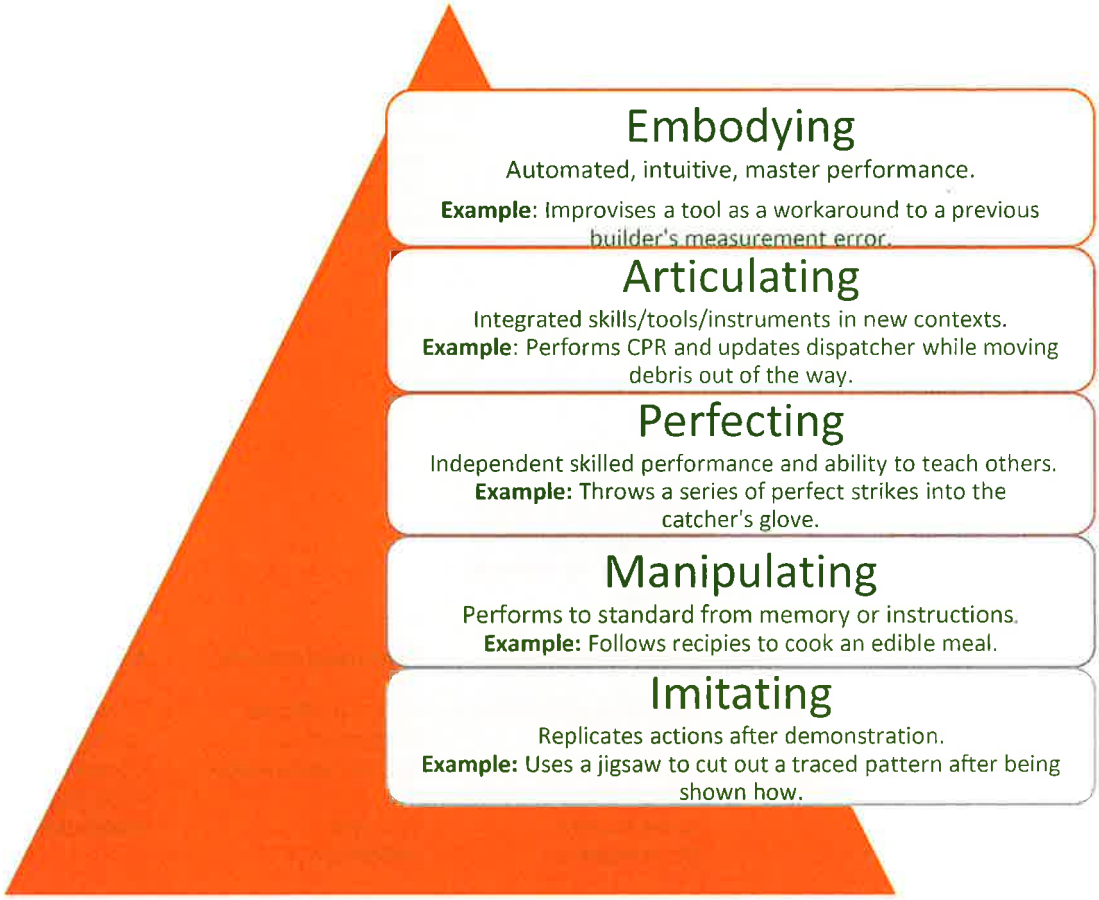
Notes:

COGNITIVE DOMAIN

Recall	Comprehend	Apply	Analyze	Evaluate	Create
Pull learned facts, terms, concepts and answers from long-term memory.	Make sense of learned information to explain and interpret it effectively.	Use information in new ways to inform a variety of different contexts.	Break info down to understand parts/ relationships/draw inferences/conclusions.	Justify arguments or decisions using evidential support or a set of criteria.	Combine information in innovative ways to create new ideas, products, solutions.
cite	add	adapt	analyze	agree	abstract
copy	approximate	allocate	associate	Advise	Adapt
describe	articulate	alphabetize	categorize	appraise	animate
draw	clarify	apply	characterize	Assess	arrange
enumerate/list	compute	ascertain	classify	audit	assemble
find/identify	convert	assign	compare	authenticate	Build
index	define	avoid	confirm	Award	budget
indicate/show	demonstrate	back up	contrast	Choose	Change
label/name	detail	calculate	correlate	conclude	code
list	discuss	capture	detect	counsel	combine
match	explain	change	diagnose	criticize	compile
point out	express	compare	diagram	critique	compose
quote	factor	customize	differentiate	Decide	construct
read	generalize	depreciate	discriminate	defend	create
recall	give examples	derive	dissect	determine	cultivate
recite	infer	determine	distinguish	disprove	debug
recognize	illustrate	diminish	divide	discriminate	depict
record	interpret	discover	document	examine	design
repeat	narrate	draw	ensure	evaluate	develop
reproduce	observe	employ	examine	grade	devise
review	outline	experiment with	estimate	hire	dictate
select	paraphrase	explore	figure out	judge	Elaborate
spell	relate	expose	file	justify	Enhance
state	rephrase	express	group	measure	facilitate
tabulate	restate	extrapolate	interpret	mediate	format
tell	review	extend	identify	motivate	formulate
Who?	rewrite	factor	illustrate	negotiate	generalize
What?	show	figure	infer	prescribe	generate
When?	subtract	graph	inventory	Predict	Hypothesize
Where?	summarize	handle	investigate	prioritize	imagine
How Much?	translate	illustrate	isolate	rank	improve
How Many?	How?	infer	lay out	rate	invent
		investigate	limit	recommend	make up
		make use of	link	test	maximize minimize
		manipulate	manage	validate	modify
		model	maximize	valuate	originate
		modify	minimize	verify	plan
		operate	moderate	uphold	predict
		personalize	monitor		propose
		plot	optimize		theorize
		practice	organize		
		predict	order		
		prepare	outline		
		price	point out		
		process	proofread		
		produce	prove		
		project	query		
		protect	reconcile		
		prove	relate		
		provide	resolve		
		relate	select		
		round off	separate		
		select	subdivide		
		sequence	summarize		
		show	troubleshoot		
		simulate	simplify		
		sketch	survey		
		solve	Why?		
		transcribe			
		transform			
		translate			
		use/utilize			
		How?			

Measurable Outcome Verbs – Psychomotor Domain

David and Bloom – Psychomotor Taxonomy of Learning



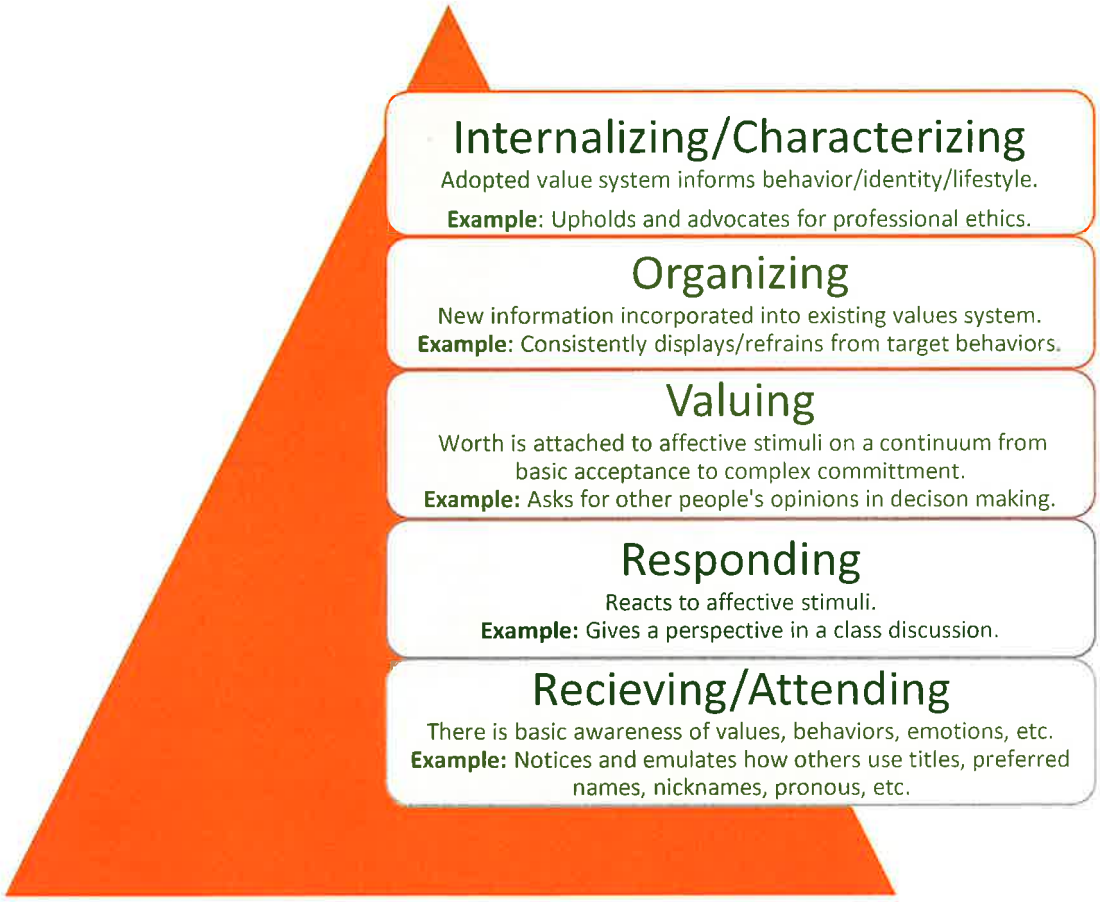
Notes:

PSYCHOMOTOR DOMAIN

Imitate Replicates actions after having them demonstrated.	**Manipulate** Performs to standard using memorized knowledge or explicit instructions.	**Perfect** Works independently to a high degree of precision.	**Articulate** Uses a variety of skills, tools, instruments and/or systems to perform integrated tasks.	**Embody** Performs intuitively and flawlessly with a high level of distinctive craftsmanship.
attempt	assemble	automate	adapt	Arrange
copy	build	Calibrate	Alter	Compose
duplicate	Complete	discriminate	change	craft
follow	Construct	Excel	combine	Create
Identify	Dismantle	hone	coordinate	design
imitate	Display	Master	customize	Formulate
Mimic	Dissect	Perfect	integrate	Guide
Perceive	Fix		interpret	invent
Replicate	follow		rearrange	Mentor
Repeat	manipulate		revise	Model
Reproduce	measure			Originate
Respond	Perform			Templatize
sense	Play			Train
trace	produce			
try	show			
	sketch			
	Verbs related to the execution of a trade, discipline, sport, activity, etc.)	Same verbs, but adjective and adverb descriptors become important to address degree		
	Adjectives/Adverbs	**Adjectives/Adverbs**	**Adjectives/Adverbs**	**Adjectives/Adverbs**
	Minimally proficient Baseline skill Adequate knowledge	Increasingly proficient Solid skill Solidified knowledge	Highly proficient Integrated skill Applied knowledge	Flawlessly proficient Unique skill Generates knowledge
	Scaffolded performance	Independent performance	Integrated performance	Model performance

Measurable Outcome Verbs - Affective Domain

Bloom, Krautwohl and Maisa – Affective Taxonomy of Learning



Notes:

Affective learning is demonstrated by behaviors indicating attitudes of awareness, interest, attention, concern, and responsibility, ability to listen and respond in interactions with others, and ability to demonstrate those attitudinal characteristics or values which are appropriate to the context or discipline.

AFFECTIVE DOMAIN

Receive/ Attend Exhibit basic awareness of affective behaviors, values and emotions.	Respond React to affective stimuli.	Value Assign affective stimuli a value on a scale of basic acceptance to complex commitment.	Organize New affective component information is incorporated into the existing values system.	Internalize/ Characterize Adopted value system informs behavior and possibly identity.
attune	Answer	Complete	Adhere	Act
ask	Assist	Describe	Alter	Advocate
choose	Compile	Differentiate	Arrange	Change
follow	conform	Explain	Combine	Commit
give	discuss	Follow	Compare	Discriminate
hold	greet	Form	Complete	Display
listen	help	Initiate	Defend	Influence
name	inquire	Invite	Explain	Propose
observe	label	Join	Generalize	Qualify
respect	listen	Justify	Identify with	question
sense	participate	Share	Integrate	Revise
show interest	perform	Study	Modify	Serve
	practice	Work at/toward	Order	Solve
	present		Organize	Verify
	read		Prepare	
	recite		Relate	
	report		Reorder	
	tell		synthesize	

Appendix 3: Cochise College Standard Descriptions for 100 – 400-Level Courses

Department Area	Curriculum Development
Procedure Title	Cochise College Standard Descriptions for 100-, 200-, 300-, and 400-Level Courses
Data Classification	Internal – For Cochise College Internal Business Use Only
Date Approved by Curriculum Committee	December 15, 2023

PURPOSE

This procedure establishes guidelines for consideration when new courses are developed by faculty and approved through the curriculum process. These guidelines may be revised as necessary.

PROCEDURE

Cochise College courses provide content at different levels of knowledge and skill, articulated via learning outcomes that have incorporated action verbs from Bloom's Taxonomy.

AzTransfer Course Levels

Criteria published in the AzTransfer Handbook and Policy Manual for assigning courses as lower or upper division are taken into consideration by the college. These guidelines offer distinctions between each level.

1. Lower-division courses (100-level and 200-level) focus on fundamental theories and concepts to accomplish at least one of the following:

    - Acquaint students with the breadth of different fields of study.
    - Introduce literacy, language, mathematics, and sciences.
    - Develop occupational skills.
    - Lay the foundation for specialized upper-division courses.

2. Upper-division courses (300-level and 400-level) emphasize analytical thinking and problem-solving skills and commonly build on the knowledge and skills of lower-division coursework. At an advanced level of difficulty, these courses:

    - Provide in-depth study, application, and understanding of theories, including scope and limitations.
    - Development of specialized intellectual or professional skills.

Course Levels
Standard descriptions for each course level are outlined below and include an example list of verbs and instructional activities appropriate for each category of cognitive processing consistent with Bloom's Revised Taxonomy. However, faculty retain the final decision regarding learning outcome language.

Below 100-Level
Courses numbered 0 through 99 are considered developmental per Policy 4002. These courses prepare students for college-level coursework by providing them with an opportunity to strengthen their skills in pre-college-level reading, mathematics, and English competencies.

100-Level
These are typically introductory courses having no university-level prerequisites, often presenting basic concepts and terminology. Students in such classes are expected to operate largely at the "knowledge" and "comprehension" levels but should be provided opportunities to develop at the "application" and "analysis" levels.

First-year (100-level) courses are generally **factual** and cover competencies that do not require previous experience or knowledge of the subject and are often introductory or survey courses that focus on:

- **Remember**
    - **Verbs**: cite, define, label, list, name, record, repeat
    - **Activities**: analogies, audio, examples, illustrations, lecture, videos, visuals
- **Understand**
    - **Verbs**: describe, discuss, explain, express, identify, recognize, restate, translate
    - **Activities**: assessment, discussion, presentation, questions, reports, review, writing

200-Level
These courses are at an intermediate level of difficulty and sometimes survey a subfield within a discipline. They often have a prerequisite at the 100-level. Students taking such classes should solidify their abilities at the knowledge and comprehension levels and be provided ample opportunity to develop their application and analysis skills.

200-level courses are generally **conceptual** and cover competencies for which some previous experience or knowledge may be desirable. A 200-level course has a prerequisite course and focuses on:

- **Apply**
    - **Verbs**: apply, demonstrate, dramatize, employ, illustrate, interpret, operate, practice, schedule, show, sketch, use
    - **Activities**: demonstrates, exercises, microteaching, practice, projects, role-play, simulations, sketches
- **Analyze**
    - **Verbs**: analyze, appraise, calculate, compare, contrast, criticize, debate, diagram, differentiate, distinguish, experiment, inspect, inventory, question, relate, test

- **Activities**: case studies, critical incidents, discussions, exercises, problems, questions, tests

300-Level

While continuing to develop proficiency at the lower cognitive levels, 300-level courses are expected to provide students with the opportunity to operate at the "analyze" and "evaluate" levels.

300-Level courses are subject-specific, are generally **procedural**, and continue to develop lower cognitive levels while developing experience through:

- **Analyze**
  - **Verbs**: analyze, appraise, calculate, compare, contrast, criticize, debate, diagram, differentiate, distinguish, experiment, inspect, inventory, question, relate, test
  - **Activities**: case studies, critical incidents, discussions, exercises, problems, questions, tests
- **Evaluate**
  - **Verbs**: arrange, collect, compose, construct, create, design, formulate, manage, organize, plan, prepare, propose, select, set up
  - **Activities**: case studies, constructs, creative exercises, develop plans, problems, projects, simulations

400-Level

Courses at the 400-level operate mostly at the "synthesis" and "evaluation" levels. They are often of a "seminar" nature, with the students taking significant responsibility for the course agenda. Courses that provide students with the opportunity to perform directed research are usually at the 400-level.

400-Level courses are generally **metacognitive**, focus on a seminar, self-knowledge, and practical application/problem-solving projects which focus on:

- **Evaluate**
  - **Verbs**: arrange, collect, compose, construct, create, design, formulate, manage, organize, plan, prepare, propose, select, set up
  - **Activities**: case studies, constructs, creative exercises, develop plans, problems, projects, simulations
- **Create**
  - **Verbs**: appraise, assess, choose, compare, estimate, evaluate, judge, measure, rate, revise, score, select, value
  - **Activities**: appraisals, case studies, critiques, exercises, projects, simulations

References

1. Anderson, Lorin, et al. A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives, Longman, New York, 2001.

2. “Criteria for Upper/Lower Division Courses - Handbook & Policy Manual - 1.” AZTransfer, www.manula.com/manuals/aztransfer/handbook-policy-manual/1/en/topic/criteria-for-upper-lower-division-courses. Accessed 16 Nov. 2023.
3. https://www.Yc.Edu/v6/Curriculum/Docs/Course_level_descriptions.Pdf.
4. Newton, Philip M., et al. “A Pragmatic Master List of Action Verbs for Bloom’s Taxonomy.” Frontiersin.Org, 10 July 2020, www.frontiersin.org/articles/10.3389/feduc.2020.00107/full.

Glossary

Assessment Day

A day (usually in the fall semester) at Cochise College to provide professional development for faculty and staff regarding program assessment.

Assessment Plan

A fillable template that details the action steps and assessment metrics for years 2 and 3 of the program assessment.

Bloom's Taxonomy

A widely known structure for thinking about learning, ordered from simple to complex and concrete to abstract. The revised Bloom's taxonomy uses action verbs to consider six cognitive domains.

Co-curricular Assessment

An extension of the formal learning experiences in a course or academic program, such as activities, programs, and learning experiences that complement, in some way, what students are learning in the academic curriculum.

Comprehensive Assessment Report

A comprehensive report completed in the final year of the assessment cycle (end of year three) to document student achievement of the learning outcomes, identify strengths or areas needing improvement within the program, and present an action plan to ensure continuous program improvement.

Course Level Learning Outcomes (CLLOs)

Specific competencies for a single course or learning activity that are consistent across all modalities of the same course (e.g. face-to-face/virtual/online).

Curriculum Map

A document that helps programs to organize and align course-level learning outcomes (CLLOs) with program-level learning outcomes (PLLOs), identifying alignment gaps and providing a blueprint for an assessment plan.

General Education Outcomes (GELOs)

Six learning outcomes established by Cochise College, which are integrated into the curriculum of degree programs. These outcomes may be part of designated general education courses or embedded within the degree program.

Program Assessment

Systematic gathering and analyzing information about student learning using available time, knowledge, expertise, and resources. This process informs decisions that impact student learning, enables programs and departments to make evidence-based decisions about the effectiveness of instruction and the curriculum, and establishes a regular structure for continuous program improvement.

Program Level Learning Outcomes (PLLOs)

Learning outcomes that articulate knowledge, behaviors, and skills students are expected to demonstrate after successfully finishing a program of study. PLLOs are developed based on the program's mission, goals, and objectives, and they serve as a guide for curriculum design, instruction, and assessment within that program.

Program Purpose Statement

A statement that communicates the program’s direction and objectives (mission) to internal and external stakeholders while aligning with the mission and values of Cochise College.

Rubric

An evaluative guide or tool that assists in standardizing the measurement of performance and learning while articulating the expectations for an assignment.

Student Learning Outcomes Assessment (SLOA)

The systematic process of collecting, analyzing, and interpreting evidence to evaluate and measure students' attainment of specific learning outcomes. SLOA serves as a tool for continuous program improvement via identifying program strengths and weaknesses, and making informed decisions to enhance the quality of education provided to students.