APPENDIX C: LEARNING OUTCOMES

The following are adapted from a workshop that was presented by Dr. Marsha Sousa in AY 2013 and variety other sources. For those who are interested, additional resources are listed at the end of this appendix.

What appear in this appendix are suggestions/tips on how to begin and complete the process of developing student learning outcomes. It is important to remember that while learning outcomes may differ in detail across disciplines, there are certain conventions/expectations that are consistent. It is also important to prepare (program and course) learning outcomes that all faculty within the discipline in question are comfortable with.

A fairly intuitive model for student learning, described as the *Intentional Curriculum Model for Enhanced Student Learning*, is comprised of three components:

- Explicit learning outcomes, as determined by the faculty;
- A strategic design by which the learning outcomes are achieved; and
- Meaningful methods of assessment by which student learning is measured.

An outline of a process by which this can be accomplished within disciplines is as follows:

1. Standards for specific areas of student achievement are defined by faculty committees.

2. The settings and activities in which students will have an opportunity to demonstrate the defined expected achievements are established by one of three approaches.

    a. Instructors of specific courses may determine which committee-defined achievements are addressed by their courses, and the activities that will provide evidence of achievement.

    b. The faculty committee may determine which courses address specific areas of achievement based on existing course activities that constitute evidence of achievement.

    c. The faculty committee may determine which courses address specific areas of achievement, *as well as* which activities will constitute evidence of said achievements.

3. Each course instructor then evaluates each student's work using the defined achievements and criteria.

Most UAS programs have already been through equivalent processes in preparing their program assessment plans.

C-1   LEARNING OUTCOMES AT THE PROGRAM LEVEL

A degree (certificate, or occupational endorsement) program's student learning outcomes *are statements of what students are expected to know and be able to do upon completion of all required coursework/activities for the program in question.*

Familiarity with student learning outcomes at the program level can be very helpful in developing learning outcomes at the course level.

Steps in preparing (or understanding) program student learning outcomes can be completed by finding answers to certain questions.

For UAS-specific examples, see the various program assessment plans posted on the Assessment page on the UAS Provost's website at http://www.uas.alaska.edu/provost/assessment.html.

Step 1: What is the *purpose* of the program?

> The purpose of a program may be highly specialized, or it may enable graduates to acquire knowledge and skills that provide multiple potential academic or career opportunities.

Step 2: What are the *goals* of the program?

> Program goals will vary, depending on the purpose of the program. Goals are typically broad, and identify the knowledge, skills, and values the program faculty intends their graduates to possess.

Step 3: What are the *student learning outcomes* for the program?

> Learning outcomes identify explicit requirements a student must meet for each goal. A goal for a given program is considered met once a student successfully completes the learning outcome(s).

Step 4: Which *courses/activities* will serve to address the student learning outcomes?

> This typically refers to the core curriculum of the program, and may include combination of courses and/or capstone activities.

Step 5: What is the program's *philosophy of learning*?

> This can be very useful in determining how learning outcomes are measured. At UAS many programs emphasize experiential learning, others emphasize the completion of traditional coursework, and some utilize a combination of traditional coursework and experiential learning activities.

Step 6: How is student learning measured?

> At the program level these might include activities such as: completion of courses, an internship, a practicum, a capstone activity, or a capstone project.

C-2 LEARNING OUTCOMES AT THE COURSE LEVEL

Student learning outcomes for a course *are statements of what students are expected to know and be able to do upon completion of all required activities for the course in question*.

Here are steps, again through answers to questions that may help in the process of developing student learning outcomes for courses. For UAS-specific examples, see the wide range of syllabi posted on course websites.

Step 1: What are the purpose and goal of the course?

> A course's purpose may be very specific. The goals for such courses may be to address specific program learning outcomes; or, for prerequisite courses, the goal would be to prepare students for subsequent coursework within the same discipline.

> Alternatively, GER or service courses have broader goals since their purpose is to address learning outcomes at the institutional level, for multiple programs, or prerequisite knowledge and skills needed for subsequent courses.

Step 2: What are the learning objectives and outcomes for the course?

> Learning objectives are broad statements that describe *how* students are expected to meet a goal, and learning outcomes are statements that specify *what* students are expected to be able to and/or demonstrate on completing the activities associated with the objectives.

Step 3: How is student learning measured?

> Tasks and/or activities might include: homework, laboratory or fieldwork assignments, quizzes or short writing assignments, midterm tests or papers, and final exams or term papers, projects and/or presentations.

C-3 PURPOSE VERSUS GOALS

Here are examples some course purposes and corresponding goals.

Purpose	Goal
HIM 116: Quantitative Methods in HIM serves as a quantitative methods course for the HIM A.A.S. degree program.	To provide students with computational skills needed for many of the courses in the HIM AAS curriculum.
ENGL 111: Methods of Written Communication serves as a GER as well as a prerequisite course for many courses.	To provide students with skills in critical reading, research, and writing.
STAT 273: Elementary Statistics serves as a service course for many disciplines.	To provide students with knowledge and skills needed to apply elementary statistical methods to a wide range of disciplines.

C-4 GOALS VERSUS LEARNING OUTCOMES

Goals are not necessarily learning outcomes, for example

Goal	Learning Outcome
Students will understand the importance of physical activities at least 3 days per week.	Students will be able to establish a personal exercise program consistent with professional guidelines.
Students will know how to receive a satisfactory grade on a difficult writing assignment.	Students will be able to apply APA format to papers and assignments.

C-5 EXPECTATIONS VERSUS LEARNING OUTCOMES

Expectations are not necessarily learning outcomes, for example

Expectation	Learning Outcome
Students will dress appropriately.	Students will be able to describe the significance of a professional appearance at work.
Students will turn in assignments by scheduled due date.	Students will be able to explain the importance of meeting deadlines.

C-6 OBJECTIVES VERSUS LEARNING OUTCOMES

Learning objectives are not necessarily learning outcomes, for example

Objective	Learning Outcome
Students will understand the scientific method.	When provided with the description of a problem, students will correctly formulate a hypothesis and describe how to use the scientific method to frame the subsequent steps that lead to a decision on the proposed hypothesis.
Understand the roles, responsibilities, and relationships of the various participants in governance process.	Students will identify the participants in governance and compare and contrast their roles and responsibilities in the governance process.
The student will be able to demonstrate knowledge of the requirements for microbial growth and control.	Students successfully completing this course will be able to describe the effects of temperature, nutrients, oxygen, pH, and moisture on microbial growth.

C-7 LEVELS OF MASTERY AND ACTION VERBS

Bloom's Taxonomy was updated in 2001 by changing mastery level names/descriptions from nouns to verbs. The table on the following page lists the mastery level verbs provided in the updated version of Bloom's Taxonomy, starting from the lowest to highest Mastery Level, along with *some* examples of corresponding action verbs.

Level	Examples of Action Verbs
Remember	Define, describe, identify, label, list, name, outline, recognize, select, state, reproduce, and recite.
Understand	Translate, interpret, convert, defend, estimate, explain, extend, generalize, infer, paraphrase, predict, summarize, and give examples.
Apply	Apply, change, compute, construct, demonstrate, discover, manipulate, modify, operate, predict, prepare, produce, relate, show, solve, and use.
Analyze	Analyze, compare, contrast, differentiate, discriminate, illustrate, infer, outline, relate, select, and separate.
Evaluate	Analyze, compare, contrast, differentiate, discriminate, illustrate, infer, outline, relate, select, and separate.
Create	Create, categorize, devise, design, explain, organize, plan, combine, compile, generate, organize, reconstruct, revise, summarize, write a report, conclude, and relate.

In addition to aligning with the course (or program) purpose, goals and objectives, learning outcomes need to be measurable.

The use of action verbs such as those listed above result in *overt behavior that can be observed and measure*d.

Certain verbs should be avoided since they are *unclear and call for covert, internal behavior which cannot be observed or measured*. Common examples of such verbs include: *appreciate, become aware of, become familiar with, know, learn, remember, and understand*. These usually appear in goals and/or objectives.

C-8 EXPLICIT LEARNING OUTCOMES

A first step in preparing measurable learning outcomes is to make sure they are explicitly defined. There are a couple of suggestions for achieving this.

Learning outcomes *may integrate the content, skills, and purpose of the discipline.* Under this approach the outcomes identify:

- The content students will learn;
- The skills the student will acquire in using the content learned; and
- The purpose, with respect to the broader goals of the discipline, behind learning the content and developing the skills identified.

Alternatively, they *may focus on the central skills and knowledge expected in the discipline.* Under this approach the outcomes:

- Reflect the uniqueness of the discipline and/or
- Emphasize best thinking/practices in the discipline and/or
- Adhere to established disciplinary standards with regard to learning.

Examples of these two approaches appear below.

Vague Outcome	Explicit Outcomes
By the end of this course, students will have added to their understanding of the complete research process.	By the end of this course, students will be able to: • Describe the research process in social interventions. • Perform a critical analysis of the quality of research by others. • Formulate research questions designed to test, refine and build theories. • Identify and demonstrate facility in research designs and data collection strategies that are most appropriate to a particular research project. • Formulate a complete and logical plan for data analysis that will adequately answer the research questions and probe alternative explanations. • Interpret research findings and draw appropriate conclusions.
By the end of this course, students will have a deeper appreciation of literature and literary movements in general.	By the end of this course, students will be able to: • Identify and describe the major literary movements of the 20th century. • Perform close readings of, and summarize literary texts. • Evaluate a literary work based on selected and articulated standards.

C-9 TIME FRAMES AND CONDITIONS ATTACHED TO ASSESSMENT

Time-frame and/or conditions should be attached to the assessment of a learning outcome; for example, a learning outcome may begin with

- By the end of this course …
- At the end of this unit …
- When given a prompt …
- With no additional outside assistance …
- When provided with …

Here are some more examples.

- Upon completing this assignment, students will be able to provide accurate diagrams of eukaryotic cells, including intracellular organelles, and be able to classify cells from microscopic images.

- By the end of this course, students will be able to develop data collection instruments for conducting sociological research.

- By the end of this course, students will be able to categorize macroeconomic policies according to the economic theories from which they emerge.

- By the end of this course, students will be able to analyze qualitative and quantitative data and explain how the evidence gathered permits a decision on a proposed hypothesis.

- When provided a problem description along with relevant constraints, students will be able to formulate, analyze and solve a mathematical model that describes the population of two competing species.

Note that the (sometimes) unstated assumption in any learning outcome is that students will be able to perform the indicated tasks *correctly* and at a level appropriate for the course in question.

C-10   HOW MUCH DETAIL IS ENOUGH?

Focus on a smaller number of explicitly defined high priority outcomes placed in broad categories (domains or sub-domains).

It is suggested that goals (hence, learning outcomes) should be challenging yet attainable, and it should not necessary for a student to attain every single learning outcome for a course (or program) to demonstrate success. Interestingly, it is also suggested that *requiring students to attain every single goal might actually indicate that the goals of the course (or program) have been set too low*.

In deciding how much is detail is enough, some important considerations are the answers to the questions

- What should students get out of the course (or the program)?
- What should students be able to do in the next course (or on completion of the program)?
- How consistent does the faculty wish the course in question to be from instructor to instructor, and from semester to semester?

The final decision on detail lies with faculty (as a group), and what is put on file does not need to be all inclusive of what is taught. However, what is provided to students (in the learning outcomes on the course syllabus) must be all-inclusive; that is, *students should not be assessed on more than what is stated in the Student Learning Outcomes on the syllabus*.

C-11 EXAMPLES OF HARD VERSUS EASY TO MEASURE LEARNING OUTCOMES

The following examples are of *outcomes that are too general and very hard to measure.*

- Students will appreciate the benefits of exercise.
- Students will be able to access resources available in the Egan Library.
- Students will develop skills in conflict resolution.
- Students will gain confidence in their problem solving abilities as related to social issues.

The following are *still general and hard to measure.*

- Students will value exercise as a stress reduction tool.
- Students will develop and apply effective skills that will enable them to navigate through resources available in the Egan Library.
- Students will demonstrate the ability to resolve personal conflicts and assist others in resolving conflicts.
- Students will demonstrate critical thinking and problem solving skills applicable to social issues.

The following examples are of learning outcomes that are *specific and relatively easy to measure.*

- Students will be able to explain how exercise affects stress.
- Students will be able to identify the most appropriate resource in the Egan Library that is pertinent to their project-related needs.
- Students will be able to assist classmates in resolving conflicts by helping them negotiate agreements.
- Students will demonstrate the ability to analyze and respond to arguments about racial discrimination.

C-12 HOW CAN STUDENT LEARNING OUTCOMES BE FIXED?

The following suggestions are adapted from "A Guide to Developing Measurable Student Learning Outcomes," prepared by the Office of Planning, Research & Students Services of Cañada College.

Shortcomings can typically be seen by asking two simple questions:

1. Can the outcome be measured? And
2. Is learning being demonstrated?

For example, in the following proposed learning outcome, while learning is demonstrated this outcome will be difficult to measure.

Participants will understand the nine reasons for conducting a needs assessment.

This learning outcome can be fixed by including appropriate action verbs (underlined below).

Participants will be able to <u>list</u> and <u>defend</u> the nine reasons for conducting a needs assessment.

The following example illustrates an outcome that can be easily measured, but for which learning is not necessarily being demonstrated.

Students will attend classes regularly and on time.

To include a demonstration of learning, this outcome can be rephrased as follows.

Student will attend classes regularly and on time, and be able to <u>articulate</u> the necessity and importance of doing so.

As illustrated above, learning outcomes with shortcomings can be rewritten to make them measurable and demonstrative of learning.

C-13 THE PROCESS SUMMARIZED

After going through the sequence of identifying the course (or program):

Purpose→ Goals → Objectives → Student Learning Outcomes

Use the following to test the results (also adapted from a checklist prepared by the Office of Planning, Research & Students Services of Cañada College).

1. Do the outcomes support the course (or program) purpose,
   goals and objectives?   Y   N

2. Do the outcomes describe what the program intends
   for students to know (cognitive), think (affective,
   attitudinal), or be able to do (behavioral, performance)?   Y   N

3. Are the outcomes important/worthwhile?   Y   N

4. Are the outcomes:
     a. Explicit?   Y   N
     b. Measurable?   Y   N
     c. A result of learning?   Y   N

5. Do you have or can you create an activity to enable
   students to learn the desired outcome?   Y   N

6. Can the outcome be used to make decisions on how to improve
   the course (or program)?   Y   N

Books

Banta, T. W. Editor, *Assessing Student Learning in the Disciplines*. Assessment Update Collections, Jossey-Bass, 2007.

Banta, T. W E. A. Jones and K. E. Black, *Designing Effective Assessment: Principles and Profiles of Good Practice*, Jossey-Bass, 2009.

Diamond, R. M. *Designing and Assessing Courses and Curricula*, 3rd Ed. Jossey-Bass, 2008.

Suskie, L. *Assessing Student Learning: a common sense guide*, 2nd Ed. Anker Publishing Company Inc., 2009.

Websites

Northern Arizona University – Office of Curriculum, Learning Design, and Academic Assessment.

   http://nau.edu/OCLDAA/Assessment-Process/Student-Learning-Outcomes/

Western Michigan University – Department of Occupational Therapy's Philosophy of Learning.

   http://homepages.wmich.edu/~dhazel/HomePage/PhilosophyofLearning.html

Cañada College – Office of Planning Research & Student Success, Student Learning Outcomes and Assessment Cycle page contains quite a few resources.

   http://www.canadacollege.edu/inside/slo/index.html

Note: Can also Google "*A Guide to Developing Measurable Student Learning Outcomes*" for Cañada College's compact and useful guide. This guide and the above website contain quite a lot of further resources and links.