# Guide for Syllabus Course Learning Outcome Revision

## Introduction to the Course Learning Outcomes

Course learning outcomes define the scope (breadth and depth) of what students will know, be able to do, etc., upon completion of the course. Course learning outcomes:

* Are explicit;
* Are learning-centered (focus on what students learn rather than on what faculty teach);
* Align with the course purpose;
* Are appropriate to the level of the degree offered (Master’s degree outcomes would be more rigorous and comprehensive than Bachelor’s degree outcomes, etc.); and
* For topics courses, it’s clear what is required of all courses, and what can be changed for class sections.

*Rationale*

The primary purpose of Course Learning Outcomes is to make teaching and learning purposeful. Learning outcomes provide a framework and a common language that both faculty and students can consistently apply to identify how the instruction, assignments and work in the course contributes to the course’s purpose.

Effective outcomes facilitate student learning because they build the foundation for the course’s design. When used in course design, learning outcomes:

* Establish the learning priorities of the course;
* Communicate a unified vision of what faculty intend students will be able to achieve upon completion of the course;
* Tie together learning opportunities within and across courses; and
* Communicate how experiences contribute to and build learning throughout the students’ degree program.

In Backward Design, learning outcomes create a foundation for designing a program, as they identify faculty members’ learning “goals” or “objectives,” which we identify at NAU as “learning outcomes.” By identifying learning outcomes, faculty can then work backwards to develop approaches to instruction and course design sequencing that will achieve their stated learning outcomes.

## The course’s learning outcomes must be explicit enough to be assessed, measured or observed.

*Rationale*

The primary purpose that NAU expects outcomes to be “explicit” is to ensure outcomes provide enough clarity to support faculty in: (a) the design of the degree program and (b) the design of meaningful assessment measures. Effective outcomes facilitate student learning because they build the foundation for the degree program’s curriculum. When used in curriculum design, degree program student learning outcomes:

* Establish the learning priorities of the course;
* Communicate a unified vision of what faculty intend students will be able to achieve upon completion of the course;
* Tie together learning opportunities within and across courses; and
* Communicate how experiences contribute to and build learning throughout the students’ university experience.

*Examples*

Two common approaches to ensure outcomes are explicit include the following:

1. Integrating content and skills of the course into a single outcome
2. Developing a broad outcome that is made explicit through clarifying “sub-outcomes”

The first approach is to integrate content and skills of the course into a single outcome. These elements provide students with a context for their learning. In other words, they not only identify content or knowledge that they will learn, but also how they will use that content or for what purpose they are learning the content. At the same time, these elements provide faculty with guidance as far as designing the course’s curriculum. The articulation of learning outcomes benefits both students and faculty by making the curriculum more transparent and making expectations across class sections of the same course more consistent.

In the table below, you will find examples that demonstrate the differences among explicit degree program student learning outcomes, outcomes missing one or more of the important contextual elements, and outcomes providing no context.

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| --- | --- | --- |
| **Exemplary** | **A little better, but not quite there.** | **Needs Improvement** |
| Upon completion of the course students will be able to:   * Assemble and analyze economic data as well as formulate models to test economic hypotheses. * Understand the assumptions, applications and outcomes associated with using the basic regression model. * Use a statistical software package in order to undertake and successfully complete quantitatively-based economic analysis. | Upon completion of the course students will be able to:  Use statistical data to make effective decisions in business  *What types of statistics, for what types of decisions, for what types of business goals?* | Upon completion of the course students will be able to:  Demonstrate quantitative reasoning  *Which degree program does this apply to, how does this apply to the context of the learner, and how is the learner going to use this vague ability in the real world?* |
| Upon completion of the course, students will  - write effectively in several genres and for various purposes—with appropriate design, fluency, voice, style, vividness, self-awareness, and awareness of audience or reader.  - Be able to invent, find, develop, and support content relevant for their writing purposes. | Upon completion of the course, students will:  Master and employ art historical vocabulary  *In what types of writing and using what types of analysis?* | Upon completion of the course, students will:  Possess written communication skills  *Which degree program does this apply to, how does this apply to the context of the learner, and how is the learner going to use this vague ability in the real world?* |

A second approach is to state a broad learning outcome and provide supporting descriptions of the outcome. Here are some examples of a few outcomes pulled from lists from various academic programs:

*Sociology Course*

Critical use of scientific methods to develop empirical explanations of social phenomena by:

* Assessing perspectives and approaches best able to research a particular phenomenon;
* Developing research designs to discover, describe and/or analyze specific social components;
* Applying and utilizing qualitative and quantitative techniques as part of the research design;
* Demonstrating effective use of technology to retrieve data and information from databases in order to assess relevant research found in research publications and other sources; and
* Analyzing and evaluating data to inform the explanation of the phenomenon being studied.

*Chemistry Lab Course:*

Apply appropriate research methods and analysis as evidenced by skills such as:

* Planning and carrying out a research project independently;
* Demonstrating the ability to be self-critical in evaluating procedures and outcomes;
* Taking responsibility for the success of a research project;
* Participating and collaborating with members of their research group and with people outside of their group; and/or
* Understanding the limitations of the research methods used in their work.

Examples of Types of Learning Outcomes and related assignments (Eberly Center)

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| **Type of Learning Outcome** | **Examples of Types of Assessment** |
| **Remember**  Students will be able to:   * recall * recognize | Objective test items that require students to recall or recognize  information:  Fill-in-the-blank   * Multiple-choice items with question stems such as, * “what is a…,” or “which of the following is the definition of…”) * Labeling diagrams * Reciting (orally, musically, or in writing) |
| **Understand**  Students will be able to:   * + interpret   + exemplify   + classify   + summarize   + infer   + compare   + explain | Papers, oral/written exam questions, problems, class discussions, concept maps, homework assignments that require (oral or written):   * + Summarizing readings, films, speeches, etc.   + Comparing and/or contrasting two or more theories, events, processes, etc.   + Classifying or categorizing cases, elements, events, etc., using established criteria   + Paraphrasing documents or speeches   + Finding or identifying examples or illustrations of a concept, principle |
| **Apply**  Students will be able to:   * execute * implement | Activities that require students to use procedures to solve or complete familiar or unfamiliar tasks; may also require students to determine which procedure(s) are most appropriate for a given task. Activities include problem sets, performances, labs, prototyping, and simulations. |
| **Analyze**  Students will be able to:   * differentiate * organize * attribute | Activities that require students to discriminate or select relevant from irrelevant parts, determine how elements function together, or determine bias, values, or underlying intent in presented materials. These might include case studies, critiques, labs, papers, projects, debates, and concept maps. |
| **Evaluate**  Students will be able to:   * check * critique | A range of activities that require students to test, monitor, judge, or critique readings, performances, or products against established criteria or standards. These activities might include journals, diaries, critiques, problem sets, product reviews, and case studies. |
| **Create**  Students will be able to:   * generate * plan * produce | These may include research projects, musical compositions, performances, essays, business plans, website designs, prototyping, and set designs. |

## The course’s outcomes must be learning-centered.

A learner-centered outcome shifts the focus of the outcome from what the faculty members are teaching to what a student is meant to learn. Since student learning in the academic program is the purpose of curriculum design and assessment at NAU, outcomes are phrased to focus upon what faculty want students to learn in the program.

*Examples*

The following example demonstrates how to move the perspective from a teacher-centered approach, and instead, to identify what students will get out of the experience. Writing the outcome from the students' perspective provides a foundation of meaning to which learners can "fasten" the concepts and skills of your discipline.

| **Excellent Learning Outcomes** | **These Need Improvement** |
| --- | --- |
| By the end of the semester, students in this course will:  - Apply foundations of research and the scientific method to business problems in IT.  - Outline the phases of research with respect to solving a business problem with IT.  - Explain the need for Ethical Considerations in Research and how Ethics applies to IT research.  - Construct an argument for using Institutional Review Boards when conducting IT research in business or academic settings.  - Discriminate between qualitative and quantitative research providing examples in IT.  - Evaluate tools appropriate for managing references as well as manipulating statistical data.  - Devise a framework for conducting a literature review and annotated bibliography.  - Differentiate between good and poor research, and identify attributes of research to assist with the classification.  - Construct a research proposal oriented toward solving a business problem using IT. | Opportunities to become familiar with research theories and methodologies.  *This approach is entirely teacher-centered, describing what the teacher will cover, not what the student will learn through this experience.* |

## The course’s outcomes are aligned with the course purpose.

High quality degree program student learning outcomes align with the degree program mission and purpose. The mission and purpose of the degree program defines the future activities for which the degree program is preparing students. Some programs may have multiple potential directions for their students, such as careers, graduate school, or general skills and knowledge that can be applied to a variety of futures. The degree program student learning outcomes should be a natural deeper description of the knowledge and skills (attitudes, ways of knowing, etc.) students will achieve, and through the achievement of those outcomes, they will be successful in the future potential pathways identified by the degree program.

For example, the purpose of the Secondary Education programs is to provide students all of the skills and knowledge they need to become teachers in their specific content area. Learning outcomes in Secondary Education programs encompass all of the skills and knowledge to develop curriculum, assess students' learning, and modify curriculum based on what students have learned. In addition, they include all of the knowledge of the content discipline of the degree program (e.g., English, Biology, Mathematics, etc.).

Another example is Geology. Their mission is to prepare students for three potential areas: further study in Geology, a career in Geology, or going directly into a career that may or may not be related to Geology once they complete their degree. Degrees with broader goals tend to focus more on the elements of critical thinking and how learning how to think critically in the discipline will provide success in a variety of areas. Critical thinking goals show up in the Degree Program Student Learning Outcomes through clearer definitions of the types of analysis and synthesis students learn to engage in.

*GSP 272: Nature & Society*

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| --- | --- |
| **Course Purpose** | **Associated Learning Outcome(s)** |
| This course serves as an introduction to how humans relate to the nonhuman world. More specifically it will analyze how humans affect nature and how nature affects society. Throughout the semester we will examine what factors coalesce to create environmental problems, how humans relate to those problems and the environment more generally, and what role values play in addressing and creating environmental harms. | 1) Explain environmental issues, their causes, and potential solutions  2) Assess the affect political and economic institutions have on individual and collective decision-making  3) Critically reflect on existing perspectives regarding the human relationship to the environment  4) Critically analyze information and make persuasive arguments based on that information, both orally and in writing (Effective writing essential skill)  5) Demonstrate critical geography insights and theories to investigate power and its consequence on environment and society |

*INF 376: Research Initiation*

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| --- | --- |
| **Course Purpose** | **Associated Learning Outcomes** |
| In preparation for a culminating one-year research Capstone experience, students embed in a research lab for one year. Students learn current research, lab practice, and informatics techniques in Biology, Ecology, or Astronomy. The focus in this first year is learning research and lab techniques, experimental design, and team work in a lab context.  This course is the second in a two semester Research Experience sequence (INF376 and INF386), which in turn prepares students for the two semester capstone sequence (INF476C and INF486C). As the second course in the sequence, this course requires that students engage in more independent thinking and practice than INF376. This course is intended to be taken by a junior level student with significant core and emphasis area course work completed. | CO1. Apply and relate fundamental methods of informatics to emphasis area problems. Students should use informatics methods specific to their emphasis area towards understanding and investigating research problems.  C04. Engage in effective research teamwork with a focus on coordination and interpersonal processes. Students are expected to participate as part of a research teams that may often be associated with a formal lab or a less formal collective of graduate students, scientists and software developers. In this course students will engage in team coordination practice and interpersonal processes such as conflict management.  C05. Engage in effective written and oral communication that communicates qualitative and quantitative data, develops hypothesis, and communicates accomplishments. Students are required to write experience reports that communicate research problems and their accomplishments. This supports BSI learning outcome L06. |

## The course’s outcomes are appropriate for the positioning of the course in the curriculum.

Being appropriate to the level of the degree is a characteristic required in the Higher Learning Commission’s (NAU’s regional accreditor) core criterion 3.A.1.: Courses and programs are current and require levels of performance by students appropriate to the degree or certificate awarded.

*Examples*

In order to define “levels of performance appropriate to the positioning of the course in the curriculum” some faculty groups have turned to the Lumina Foundation’s Degree Qualifications Profile (DQP), which explicitly articulates differentiated learning outcomes for Associate’s, Bachelor’s, and Master’s degrees. A few sections that seemed to be most relevant to the work of the committees is copied and pasted from the Degree Qualifications Profile below. The PDF of the Degree Qualifications Profile is here <https://www.luminafoundation.org/files/resources/dqp.pdf> .

What the following examples explore is the different level of learning between a Bachelor’s and Master’s Degree. Of course, the specific content knowledge of the discipline would need to be included in the outcomes, as well as the specific purpose of learning developed by faculty in the degree program.

**Degree Qualifications Profile Categories:**

|  | **100-200 level** | **300-400 level** | **500-700-level** |
| --- | --- | --- | --- |
| **Specialized Learning** | * Describes the scope of the field of study, its core theories and practices, using field-related terminology, and offers a similar explication of at least one related field. * Applies tools, technologies and methods common to the field of study to selected questions or problems. * Generates substantially error-free products, reconstructions, data, juried exhibits or performances appropriate to the field of study. | • Defines and explains the structure, styles and practices of the field of study using its tools, technologies, methods and specialized terms.  • Addresses a familiar but complex problem in the field of study by assembling, arranging and reformulating ideas, concepts, designs and techniques.  • Frames, clarifies and evaluates a complex challenge in the field of study and one other field, using theories, tools, methods and scholarship from those fields to produce independently or collaboratively an investigative, creative or practical work illuminating that challenge.  • Constructs a summative project, paper, performance or application that draws on current research, scholarship and techniques in the field of study. | • Elucidates the major theories, research methods and approaches to inquiry and schools of practice in the field of study, articulates their sources, and illustrates both their applications and their relationships to allied fields of study.  • Assesses the contributions of major figures and organizations in the field of study, describes its major methodologies and practices, and illustrates them through projects, papers, exhibits or performances.  • Articulates significant challenges involved in practicing the field of study, elucidates its leading edges, and explores the current limits of theory, knowledge and practice through a project that lies outside conventional boundaries. |
| **Commu-nication Fluency** | • Develops and presents cogent, coherent, and substantially error-free writing for communication to general and specialized audiences.  • Communicates effectively to general and specialized audiences through structured oral presentations.  • Negotiates with peers an action plan for a practical task, and communicates the results of the negotiation either orally or in writing. | • Constructs sustained, coherent arguments, narratives or explications of issues, problems or technical issues and processes, in writing and at least one other medium, to general and specific audiences.  • Conducts an inquiry relying on non-English-language sources concerning information, conditions, technologies or practices in the field of study.  • Negotiates with one or more collaborators to advance an oral argument or articulate an approach to resolving a social, personal or ethical dilemma. | • Creates sustained, coherent arguments or explanations summarizing his or her work or that of collaborators in two or more media or languages for both general and specialized audiences. |
| **Applied Learning** | • Describes in writing at least one case in which knowledge and skills acquired in academic settings may be applied to a field-based challenge, and evaluates the learning gained from the application using evidence and examples.  • Analyzes at least one significant concept or method in light of learning outside the classroom.  • Locates, gathers and organizes evidence regarding a question in a field-based venue beyond formal academic study and offers alternate approaches to answering it. | • Prepares and presents a project, paper, exhibit, performance or other appropriate demonstration linking knowledge or skills acquired in work, community or research activities with knowledge acquired in one or more fields of study, explains how those elements are structured, and employs appropriate citations to demonstrate the relationship of the product to literature in the field.  • Negotiates a strategy for group research or performance, documents the strategy so that others may understand it, implements the strategy, and communicates the results.  • Writes a design, review or illustrative application for an analysis or case study in a scientific, technical, economic, business, health, education or communications context.  • Completes a substantial project that evaluates a significant question in the student’s field of study, including an analytic narrative of the effects of learning outside the classroom on the research or practical skills employed in executing the project. | • Creates a project, paper, exhibit, performance or other appropriate demonstration reflecting the integration of knowledge acquired in practicum, work, community or research activities with knowledge and skills gleaned from at least two fields of study in different segments of the curriculum and articulates the ways the two sources of knowledge influenced the result.  • Designs and implements a project or performance in an out-of-class setting that requires the application of advanced knowledge gained in the field of study to a practical challenge, articulates in writing or another medium the insights gained from this experience, and assesses (with appropriate citations) approaches, scholarly debates or standards for professional performance applicable to the challenge. |
| **Analytical Inquiry** | • Identifies and frames a problem or question in selected areas of study and distinguishes among elements of ideas, concepts, theories or practical approaches to the problem or question. | • Differentiates and evaluates theories and approaches to selected complex problems within the chosen field of study and at least one other field. | • Disaggregates, reformulates and adapts principal ideas, techniques or methods at the forefront of the field of study in carrying out an essay or project. |
| **Use of Informa-tion Resour-ces** | • Identifies, categorizes, evaluates and cites multiple information resources so as to create projects, papers or performances in either a specialized field of study or with respect to a general theme within the arts and sciences. | • Locates, evaluates, incorporates, and properly cites multiple information resources in different media or different languages in projects, papers or performances.  • Describes characteristics of essential information resources, including their limitations, and explains strategies for identifying and finding such resources.  • Generates information through independent or collaborative inquiry and uses that information in a project, paper or performance. | • Provides evidence (through papers, projects, notebooks, computer files or catalogues) of contributing to, expanding, evaluating or refining the information base within the field of study. |

## For topics courses, it’s clear what is required of all courses, and what can be changed for class sections.

Example:

**Course Student Learning Outcomes:** For all sections, this course will result in mastery of the following Department of Anthropology Applied and Research Track Graduate Student Learning Outcome:

Students will be able to summarize and discuss ethics and the ethical codes employed in anthropology, and identify and reason through real-world examples of ethical dilemmas

For all sections of Ethics in Anthropological Research, students will demonstrate through either a major term paper or a series of short papers the capacities for critical thinking and effective writing central to their development as professionals in anthropology.

In all sections students will

* discuss the critical issues at the heart of current anthropological and archaeological research in the U.S. and the rest of the world.
* identify and synthesize basic ethical principles and professional codes of conduct in anthropology and archaeology.
* research, discuss, and write about current ethical dilemmas faced by anthropologists and archaeologists.
* identify and propose solutions for hypothetical ethical dilemmas presented in class.

In this section, the particular student learning outcomes are as follows. Students who successfully complete this course will be able to:

* identify ethical issues in ethnographic and archaeological research
* discuss the ethical issues anthropologists working for the military face
* argue for or against the use of human remains in research
* identify, describe, and discuss global issues in archaeological ethics