Course Objectives and Curriculum Mapping

Dr. Rick Upchurch

Course objectives should develop within a clear understanding of what the institution and its academic programs intend students to accomplish. A course may be well-organized and academically demanding while contributing little to the degree's broader purposes. When we develop objectives primarily from the subject matter of an individual course, we can lose sight of the relationship between that course and the education we have promised our students.

This paper proposes an approach in which institutional mission informs departmental priorities, departmental priorities inform program outcomes, and program outcomes guide course objectives and assessment. Evidence of student learning then supports evaluation at each successive level. Generative AI can assist faculty in examining the existing curriculum, identifying its apparent priorities, and comparing those priorities with the purposes the institution has established. Faculty judgment remains necessary throughout that process.

Connecting the Institution to the Course

The institutional mission establishes the purpose of the education we offer. Institutional learning outcomes translate that purpose into expectations for students. Departments and programs give those expectations a disciplinary focus, and courses provide the learning experiences through which students develop the expected capabilities.

Figure 1 One hypothetical connection from institutional purpose to course learning



In this example, ethical judgment becomes progressively more specific. Evidence from a course assignment can contribute to the review of the program outcome when the task and scoring criteria actually measure ethical reasoning. The arrows indicate the direction of design and review, rather than proof that either has occurred.

Here, objectives describe intended learning, outcomes describe what students should demonstrate, and competencies identify the capabilities that learning should produce. Institutions use these terms differently; the essential requirement is clarity about what students will be able to do.

Mapping Learning and Assessing Achievement

A manageable framework might include two or three institutional competencies, three or four departmental outcomes, and four to six program outcomes. These numbers illustrate a possible structure. The appropriate number depends on the institution and discipline. Each level should carry forward the commitments that apply to it, while making room for its own educational responsibilities.

A course might contribute most directly to one or two program outcomes while retaining objectives specific to its subject. Every course should have an identifiable contribution, and every program outcome should have a planned place in the curriculum. Shared commitments may also be addressed through general education. Where a departmental layer adds little, the institution can document the connection between programs and institutional outcomes directly.

A curriculum map makes these relationships visible. It identifies the course objectives that support each program outcome and indicates where students first encounter a capability, practice it, and demonstrate the expected level of achievement. The University of California, Davis describes this progression through introduction, reinforcement, and mastery. The University of Missouri similarly advises faculty to connect course objectives, learning activities, and assessment with program outcomes (University of California, Davis, n.d.; University of Missouri, n.d.).

Table 1 A simplified map for three outcomes in a hypothetical leadership program

Required course	Ethical judgment	Use of evidence	Professional communication
Foundations of Leadership	I	I	I
Ethics and Leadership	R	R	
Organizational Inquiry		R	R
Leadership Capstone	M/A	M/A	M/A

I = introduce; R = reinforce; M = demonstrate mastery; A = collect designated assessment evidence. A blank indicates no planned contribution in this simplified illustration. These symbols describe the design; student work is needed to determine achievement.

Reading down the ethical judgment column shows a progression from initial learning to application, then to a capstone demonstration. Reading across Organizational Inquiry shows its main contribution to evidence and communication. No single course must address every outcome.

An outcome appearing in one course may satisfy a minimal coverage check while providing too little practice. Faculty should also check each permitted route through the degree. An outcome addressed only in an elective may be missed by students who choose another option (University of Missouri, n.d.).

Checking Alignment Within the Course

A course can have appropriate objectives and still fail to provide the instruction or assignments needed to achieve them. Mapping its stated objectives to program outcomes establishes an intended relationship. Faculty must also examine what students are taught, what they practice, what they are asked to produce, and how that work is evaluated.

Carnegie Mellon University's Eberly Center explains that objectives, instructional strategies, and assessment should reinforce one another (Carnegie Mellon University, n.d.). In practical terms, the thinking required by an objective should be taught and practiced before students are expected to demonstrate it in an assessment.

Consider the course objective in Figure 1, made more explicit: "Compare two responses to a workplace ethical dilemma and defend a recommendation using an ethical framework and evidence of stakeholder effects." The following comparison shows how a plausible course design can fall short.

Table 2 Aligning the course with the ethical reasoning objective

Element	Where alignment breaks	A revision that supports the objective
Instruction and practice	Read definitions of ethical theories and summarize the chapter.	Model analysis of a dilemma, then guide students through a practice case with feedback.
Graded assignment	Describe a workplace problem and identify one ethical theory.	Compare two responses, apply a framework, examine stakeholder effects, and defend a recommendation.
Rubric	Score length, grammar, citation format, and completeness.	Score the comparison, use of the framework, stakeholder analysis, and strength of justification; retain suitable writing criteria.

The original assignment could be completed successfully without comparing alternatives or defending a decision. Its rubric could reward a polished paper that demonstrates little ethical reasoning. Adding the objective to the syllabus would leave those gaps unresolved.

A rubric also cannot repair an assignment that never asks students to perform the required task. Faculty should check the objective, instructional materials, practice, assignment directions, and scoring criteria together. If students are asked to evaluate, the course must offer opportunities to learn and practice evaluation, and the assessment must provide evidence of it.

Faculty discussion, assignment review, and analysis of student performance remain necessary.

What AI Adds to Established Practice

Curriculum mapping and outcomes assessment were established before ChatGPT's public release on November 30, 2022 (OpenAI, 2022). Sam Houston State University's 2019 accreditation narrative, for example, documents assessment across business, education, the sciences, and other fields, using cycles from 2014 through 2017 (Sam Houston State University, 2019).

The concern is the gap that can arise between stated institutional expectations and course development. An instructor given a course description with little program context may develop reasonable objectives that remain disconnected from a shared plan. Establishing the extent of this problem would require additional evidence.

Generative AI can assist with extracting objectives, grouping related statements, and proposing relationships for review. The University of Illinois Chicago provides guidance on using AI, including learning outcomes, curriculum maps, and rubrics, while emphasizing faculty and staff responsibility for reviewing and finalizing the results (University of Illinois Chicago, n.d.).

Reconstructing the Existing Program

Consider a program consisting of twelve courses. Faculty can assemble current syllabi and ask AI to extract each course objective, preserving its wording and source. The collection should also include assignment directions, rubrics, and representative instructional materials or practice activities. A syllabus alone usually cannot establish whether these elements align.

AI can then group recurring capabilities and propose a concise description of the program's apparent priorities. Each proposed connection should remain traceable to its source. The analysis should distinguish an explicit objective from an inferred relationship and report missing materials as unavailable. An absent document leaves a question for faculty review; it does not establish that the learning opportunity is absent.

Table 3 Questions to examine for each proposed course contribution

Evidence to inspect	Question for faculty and AI-assisted review
Course objective	What capabilities and level of thinking are promised?
Instruction and practice	Where are students taught that capability and given feedback?
Assignment and rubric	Do the task and criteria elicit and evaluate the promised performance?
Student work and scores	What do students actually demonstrate against those criteria?

For the leadership example, AI might identify ethical language across several syllabi, but mostly find summary assignments in the available materials. That finding should prompt faculty inspection of the courses before the program is credited with a well-developed sequence in ethical reasoning.

Deciding What the Program Should Accomplish

Suppose the analysis produces six apparent program outcomes. Faculty should first check whether the synthesis accurately represents the courses, and then ask whether those priorities serve the degree's intended purposes. The documents describe existing practice; faculty must decide what the program ought to accomplish.

Faculty may retain two outcomes, revise two, and replace two. A neglected professional capability or an institutional commitment may need greater attention. Another priority may no longer serve the program. The analysis makes these patterns visible, enabling faculty to make informed decisions.

For example, an apparent priority might be “describe leadership theories.” Faculty could retain that knowledge within courses while revising the program outcome to require students to “use leadership theories to evaluate an organizational problem and justify a response.” The revision changes the expected level of performance. It also creates obligations for instruction, practice, assignments, and assessment throughout the program.

Confirming Departmental and Institutional Alignment

Before faculty adopt the revised program outcomes or begin changing individual courses, they should step back and examine the departmental framework. Proposed program outcomes must be considered in relation to the department’s purposes and, through that relationship, the institutional mission and learning outcomes. A program can reach internal agreement and still move away from the larger educational commitments it is expected to support.

If departmental outcomes are absent or unclear, AI can compare the approved outcomes of the department’s programs and propose shared themes. Faculty and academic leaders must then decide whether those themes express the department’s intended purpose, using institutional commitments, disciplinary expectations, and applicable professional standards as reference points.

Suppose the institution expects ethical judgment, but the proposed leadership outcomes emphasize only efficiency and productivity. Before revising courses, faculty should determine how the program will address the ethical consequences of leadership decisions. Agreement within the program would leave the institutional commitment unresolved.

This review may reveal problems above the course level. A proposed program outcome might expose a departmental statement that is too vague to guide decisions. A departmental review may reveal that an institutional learning outcome needs clarification. Those concerns should move through the institution’s established governance process. Otherwise, we risk asking course revisions to resolve ambiguity that originates elsewhere.

Once the broader alignment is confirmed, faculty can revise course objectives and the instruction, practice, assignments, and assessments that support them. The revised map should identify where learning opportunities and evidence are needed. Implementation must also account for students who will complete a combination of existing and revised courses.

Faculty Responsibility and Continuing Review

AI may combine objectives that share vocabulary but require different levels of thinking. It may overlook an outcome or generate connections that the evidence does not support. Faculty should verify source references, test questionable mappings, and record their decisions.

Faculty discussion clarifies how a course is taught. Examination of instructional materials and assignments tests its design. Student work provides evidence of achievement. These sources answer different questions and should be examined together. Student work must be handled in accordance with institutional requirements and within an approved environment.

Using Student Performance to Test the Map

Suppose 24 students complete the ethical dilemma assignment. The faculty has established a four-point rubric and a benchmark of at least 3 for proficiency on each relevant criterion. They have also set a program target of 80 percent of students reaching that benchmark. The following figures are hypothetical; the thresholds illustrate decisions faculty must establish and justify.

Table 4 A course grade can conceal a weakness in a specific outcome

Measure	Students meeting expectation
Passing course grade	22 of 24 (92%)
Appropriate use of an ethical framework	20 of 24 (83%)
Reasoned comparison of two responses	14 of 24 (58%)

The course completion rate looks strong. The comparison criterion falls well below the target. Faculty should inspect student work and examine whether instruction modeled comparison, whether practice included useful feedback, and whether directions and scoring were clear. They can then revise the course and collect evidence again. These results would support a focused improvement decision, rather than a claim that the program outcome had been met.

Evidence from several courses can inform program review. Evidence from programs can inform departmental and institutional review when the measures address the broader outcome and expectations are comparable. Averaging course grades or unrelated rubric scores would not establish that connection. A mission's service or scholarship commitments may also require evidence beyond student coursework.

Our responsibility is to establish a defensible relationship between the education we promise and the learning students demonstrate. AI can help examine curriculum documents and identify questions. Faculty must determine whether the design supports learning, whether students have achieved the expected standard, and what changes the evidence warrants.

References

Carnegie Mellon University. (n.d.). Why should assessments, learning objectives, and instructional strategies be aligned? Eberly Center. https://www.cmu.edu/teaching/assessment/basics/alignment.html

OpenAI. (2022, November 30). Introducing ChatGPT. https://openai.com/index/chatgpt/

Sam Houston State University. (2019). Student outcomes: Educational programs. 2019 SACSCOC reaffirmation compliance narratives, Standard 8.2.a. https://sacscoc.shsu.edu/2019/compliance-narratives/8.2.a.html

University of California, Davis. (n.d.). Outcomes and curriculum. Learning Outcomes Assessment. https://assessment.ucdavis.edu/assessment/process/outcomes-curriculum

University of Illinois Chicago. (n.d.). AI-assisted assessment support. Academic Program Review and Assessment. https://apra.uic.edu/degree-program-assessment/ai-assisted-assessment-support/

University of Missouri. (n.d.). Mapping course objectives to program outcomes. Office of the Provost. https://provost.missouri.edu/programs-centers/program-assessments/assessment-of-student-learning/mapping-course-objectives-to-program-outcomes/