



# SEQUENCING AND ARTICULATION

By Catherine Imperatore

## HIGH-QUALITY CAREER AND TECHNICAL EDUCATION (CTE) PROGRAMS OF STUDY ARE COMMITTED TO

vertically aligned learning within and across education levels to facilitate students' progress toward education and career success. The importance of this concept is captured in the formal definition of "program of study" included in the Strengthening Career and Technical Education for the 21st Century Act (Perkins V), which describes a coordinated, non-duplicative sequence of content that progresses in specificity and has multiple entry and exit points. For this reason, Sequencing and Articulation is one of ACTE's 12 elements of high-quality CTE within the *Quality CTE Program of Study Framework*.

The Sequencing and Articulation element of ACTE's quality framework

includes eight criteria that address key components of the definition of a program of study referenced above as well as the articulation, coordination and collaboration that support programs of study, career pathways and accelerated learning. The criteria listed below are from the 2018 version of the ACTE *Quality CTE Program of Study Framework*.

## Criteria for Quality in Sequencing and Articulation

**a.** The program of study includes a sequence of courses and/or competencies across secondary and postsecondary education that incorporates technical, academic and employability knowledge and skills.

**b.** The program of study starts with broad foundational knowledge and skills and progresses in specificity to build students' depth of knowledge and skills.

**c.** Content and standards within the program of study are non-duplicative and vertically aligned to prepare students to transition seamlessly to the next level of education.

The concept of a program of study has been instrumental in the transition of CTE from narrower vocational training to a broader education system that prepares students for college and career. At the heart of the program of study is the horizontal integration of the three domains of CTE learning — technical, academic and employability knowledge and skills — with the vertical alignment of learning within and across education levels.

High-quality programs of study are built on standards and curricula that progress from more general, introductory content to more specific, focused learning as students deepen their knowledge and skills in a particular career area. This process of cumulative learning should be apparent within each course and in well-defined course sequences that build on each other, even when students transition to another institution or learner level. This sequencing requires extensive coordination among administrators and instructors in order to maximize alignment and minimize duplication.

Progressive, sequenced learning applies not only to the traditional credit-based education model but also is a natural fit with competency-based education models that focus on skill mastery at the student's own pace.

**d.** The program of study sequence leads to one or more recognized postsecondary credentials, including industry certifications, licenses, apprenticeship certificates, postsecondary certificates and degrees.

**e.** The program of study allows for multiple entry and exit points that incorporate recognized postsecondary credentials.

**f.** Students in the program of study have opportunities to earn credit that articulates to the next level of education, such as through dual or concurrent enrollment programs or stackable credentials.

High-quality programs of study are committed to facilitating students' transition to the next level of education, not only through sequential curriculum but also through opportunities to earn articulated credit. This may include high school students earning postsecondary credit through dual or concurrent enrollment, Advanced Placement or International Baccalaureate, as well as adult learners being able to articulate credit from non-credit or basic skills programs to for-credit programs, among other examples.

In addition, high-quality programs of study culminate with recognized postsecondary credentials and frequently incorporate credentials at appropriate points along the way. The credentials available, and the appropriate timing for award of those credentials, will vary based on career area, length of program of study and number of institutions/learner levels involved.

Whenever possible, CTE credentials should be stackable so that learners have tangible markers of the knowledge and skills they've gained. This helps students who continue their education without interruption as well as those who step out to participate in the workforce before returning. For instance, Los Angeles Trade-Technical College's renewable energy program enables students to move from a certificate in energy systems technology fundamentals to more focused certificates in areas like solar panels, solar thermal, and weatherization and energy efficiency, to associate degrees in those areas of emphasis.

**g.** Secondary and postsecondary CTE staff collaborate regularly on course sequencing, vertical alignment and opportunities for credit transfer agreements.

**h.** The program of study is coordinated with broader career pathways systems, as defined in the Workforce Innovation and Opportunity Act, as appropriate and available.

Effective sequencing and articulation require consistent collaboration among secondary CTE, postsecondary CTE and, frequently, adult education instructors and staff as well as the broader stakeholder community. Practitioners must have time, resources and support to carry out this collaboration, as further described in the Prepared and Effective Program Staff element of the ACTE quality framework.

In addition, when possible, the program of study should be integrated into broader career pathways systems that combine education with support services to help students succeed while responding to state or regional workforce needs. As a local CTE educator or administrator, you may not have the power to ensure that your program is part of a career pathways system. However, you can demonstrate to those in authority the benefits of such a system. The ACTE quality framework is one piece of evidence you can use to make your case.

### Success Strategy: Dual-credit Faculty Liaisons

Oregon's Portland Community College (PCC) is facilitating high-quality dual-credit programs through faculty liaisons. PCC offers tuition-free dual-credit courses in academic and CTE subject areas, taught by qualified high school teachers on the high school campus. The faculty liaison's role is to support high school instructors teaching PCC dual-credit courses and the sponsoring PCC department to ensure that the high school course

aligns with the college course. Liaison activities include curriculum development, syllabus review, high school classroom site visits and professional development.

### Learn More and Assess Your Programs

Practitioners can turn to ACTE's High-quality CTE Tools online library for publications, guides and toolkits on programs of study and career pathways. Resources within the Sequencing and Articulation section share case studies of effective pathway programs, innovative approaches to dual enrollment and credit, and guides and toolkits for implementing and assessing the quality of programs of study and career pathways.

In addition, practitioners can use the *Quality CTE Program of Study Framework Self-evaluation Instrument* to assess a single program, or multiple programs across a district or institution, in relation to the Sequencing and Articulation element and all 12 elements of high-quality CTE. The rubric can be completed on paper or online, where users can receive automatically calculated scores, save and print their results, and be connected to the online library for areas identified as needing improvement. ■

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### EXPLORE MORE

High-quality CTE Tools Online Library: [www.acteonline.org/high-quality-CTE](http://www.acteonline.org/high-quality-CTE)

*Quality CTE Program of Study Framework and Self-evaluation Instrument:* [www.acteonline.org/high-quality-CTE](http://www.acteonline.org/high-quality-CTE)