



# Applied Academic Case Study Summary Report

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## Introduction

In 2007, the Oregon State Board of Education adopted a new set of high school diploma requirements. The new diploma requirements are based on a set of principles that include:

- Being flexible and student-centered; using the student education plan and profile to guide student choices.
- Awarding credits on the basis of proficiency rather than seat time.
- Encouraging students to excel beyond minimum standards; providing support in that endeavor.
- Continuing to align standards from grade to grade and from high school to postsecondary options.

The new diploma requirements increased the number of math and science credits required for graduation. The requirements include an expanded definition of the types of coursework that would meet the credit requirements in all academic content areas. This broader definition of qualifying coursework recognized the value of various applied academic options including Career and Technical Education (CTE) courses, integrated academic course sequences, project-based learning, and other models of proficiency-based learning. Collectively, these options are referred to as applied academics.

When schools offer applied academic options, students may earn full or partial academic credit by using academic content in real-world situations to demonstrate proficiency. Students who receive credit through integrated and applied courses complete all of the high school credit requirements at the same level of performance as students following more traditional approaches. The responsibility for planning and scheduling courses, delivering instruction, and awarding credit still resides with the local school district. The Oregon Content Standards are used to align curriculum and instruction to allow students to demonstrate that they have met rigorous expectations in order to receive academic credit.

This study describes how five Oregon high schools have developed and implemented applied academic credit options. Its purpose is to provide a resource for teachers, schools, and school districts that are in the process of developing similar options for their students. The five schools and programs are:

- West Salem High School – Early Childhood Education.
- Sabin-Schellenberg Professional Technical Center – Agriculture.
- North Marion High School – Manufacturing Technology.
- Sprague High School – Accounting/Financial Systems.
- Mountain View High School – Automotive Technology.

Each of the five case studies includes an overview of the credit option selected, a detailed account of its development and implementation, and a description of how students responded. The case studies are organized around the applied academic guidelines provided by the Oregon Department of Education (ODE) in Guidelines, Scenarios, and Resources for Offering Credit in Applied Academics. (See “Resources” at the end of this report.) This structure provides a detailed description of each school’s experience in implementing applied academic options in relation to the applied academic guidelines.

## **Methods**

The primary data for these cases were collected using an interview protocol developed specifically for the purpose of this study. This protocol contains a detailed list of questions intended to engage the participants in an informal conversation that covered the desired topics and questions. These interviews were conducted in person, lasted about an hour, and most occurred at the study schools. In some cases, interviews were conducted with a single individual; other interviews included groups of two to three.

The participants included teachers, school administrators, and school district personnel. The same interview protocol was used for each interview, although slight modifications were made depending on the participant and his/her level of involvement in the project. The individuals who participated in this study were, without exception, very willing to make time for the interviews. They were each initially recruited via an email describing the purpose of the study and how they could participate.

Interviews were tape recorded and transcribed for analysis. Statements made during the interviews were organized into categories that matched the questions listed in the interview protocol, and a case study for each school was developed. To accurately depict participants' experiences, their exact words and phrases were incorporated as much as possible in the descriptions of each case. Each participant was also given the chance to review drafts of the case study relating to their school. Most of the feedback resulting from this process was very positive. When revisions were required, the revised documents were sent to the participants and the process was repeated.

Supplementary data sources included curriculum documents, assignments, assessments, examples of student work, and other documents related to each option. Information from these artifacts was used to enrich the study by providing specific examples of elements described in each case. These documents are attached as appendices to their respective cases (see "Resources, below).

## **Summary of Findings**

Although each of the five cases has its unique aspects, there are also commonalities among them. These common threads, along with other key findings, are presented in this section.

### *Option Overview*

The new diploma requirements specify a variety of applied academic learning options students may use to meet academic credit requirements. All five of the study schools utilized CTE courses for this purpose, finding ways to enhance the academic rigor of the applied coursework in previously existing CTE courses or programs. The primary reasons for this choice are: First, existing CTE courses provided a convenient and affordable way to deliver the necessary content without needing to design and schedule new courses or hire additional teachers. Second, in each case the CTE teachers were the driving force behind the development of the applied academic option; they initiated the development of the option and continued to be involved in teaching the courses. These teachers knew that a substantial amount of academic content was inherent in their CTE courses, and saw the development of applied academic options as an effective strategy for teaching CTE skills and academic content through the application of the academic concepts in a real-world context.

With the exception of the long-standing life science credit option offered by the Sabin-Schellenberg Professional Technical Center, the schools were in their first or second year of developing applied academic credit options at the time of this study (summer, 2011). Those schools chose to offer math credit through existing CTE programs. Factors that influenced these decisions included: the natural occurrence of math content in the CTE program areas; the desire to provide alternative ways for students to meet the new higher math credit requirement; the availability of an academic content teacher willing to participate in the project; and the availability of Math-in-CTE workshops as a starting point for collaboration.

One school piloted a course that may award 1 credit of applied math; further work is needed before it can be approved. Four of the schools created applied academic options that will offer students .5 credit of math (3 schools) or life science (1 school). The .5 math credit options are not complete alternatives to the new math credit requirement for graduation; further exploration is being done.

### *Development Process*

This summary of the development of the options is organized around the seven steps provided in [Guidelines, Scenarios, and Resources for Offering Credit in Applied Academics](#) as a guide for teachers and administrators who wish to make applied academic options available to their students. (See “Resources” at the end of this document for more detail on each step.)

#### 1. Form a team

In all of the case studies, teachers were able to form strong teams and valued the importance of a CTE teacher and an academic teacher working together. In most cases, the team was formed at Math-in-CTE or other workshops. It was important to find a teacher from an academic content area who had a natural fit with the CTE program and who could either see the academic content that already existed in the CTE program, or the potential for it to be developed. In two cases, initial difficulties of finding a suitable partner were overcome through persistence on the part of the CTE teacher. Teams were sometimes successful because the instructors had a strong professional relationship previous to working on the project. All of the teams reported that the project required extensive work – usually more than expected – and that it was difficult to find time to work together. Beyond the workshops, teachers spent time during the summer and periodically during the school year. The scheduling challenges for one team resulted in the school and district identifying better ways of supporting teachers in similar projects.

#### 2. Review applied course for academic content

Prior to reviewing applied courses and instructional materials for academic content, a process that included both applied and academic teachers, programs were examined to find the most natural academic fit for the applied courses. In some cases, that process was based on work that had been done previously; the actual review often began at a Math-in-CTE workshop. Courses were examined to identify areas within the existing curriculum that already addressed academic standards, as well areas that had the potential to address higher level standards. Often, applied courses were found to address a substantial amount of academic content, but not explicitly. It sometimes proved more difficult than expected to align academic content with the practical ways content is used when applied in careers. One challenge was to identify enough academic content to justify offering academic credit within the existing program while maintaining the integrity of both the academic and applied content.

#### 3. Determine amount of academic credit to be offered

The familiarity of the academic teachers with the standards required for academic courses, and the amount and type of content that must be covered to justify awarding the credits, proved invaluable for determining the amount of academic credit that should be offered in the applied courses. This process was easier when a district resource existed that assigned a point value to the standards addressed in each academic course. The decision to offer standard academic credit or applied academic credit was based on teacher qualifications, how well the credit solution matched the program design and academic course offerings, and how well the credit offered met student needs. Three studies offered .5 applied math credit which, by itself, is not enough to fulfill the third year math requirement; one study offered .5 applied science credit; and one was a pilot project with the credit yet to be decided.

#### 4. Plan ways for students to meet all content expectations

All but one of the case studies reported that academic credit was awarded based on demonstrated proficiency, or a minimum cumulative grade in work samples or projects in which the academic content was embedded. One study reported that math-explicit lessons were embedded in the applied coursework. Most of the programs reported that a culminating activity was required – a presentation, comprehensive work sample, or oral exam. Two programs required a math exam, one with a pre- and post-test design. One program required that students pass the entire course sequence to earn the academic credit.

#### 5. Develop and document curriculum, and specify assessments

All case studies reported that their curriculum, including work samples and projects, could be refined to more explicitly address academic standards. The academic teacher provided curriculum refinement as well as the design of specific academic assessments, when used. This helped address a concern of some teachers that student understanding of academic standards was authentically assessed. It was important that the academic content be taught explicitly in the CTE programs, complement the existing academic courses, not be remedial, and provide an accessible alternative for students to earn academic credit. Two programs reported that vocabulary needed to be aligned between the academic and applied courses.

All studies reported that their efforts were guided by the desire to develop curriculum that is personally meaningful or relevant to the student, help students make the connection between educational preparation and entry into a career, and provide the opportunity to use academic content in applied settings. These factors were seen as increasing the value and relevance of the CTE courses. Decisions made about awarding credit included the number of assessments (when used) and the cut scores, what demonstrated comprehensive understanding in a work sample or project, and what constituted a successful exit interview.

A concern of all studies was maintaining the integrity of the academic content as well as the applied nature of CTE. In one instance, this was difficult because the software used in the career provided operational shortcuts for using math. In other cases, the modified lessons could take more time and threaten the integrity of the CTE curriculum. Other concerns included the effort of designing final work samples, portfolios, oral exams, and specific rubrics. Difficulties were also noted when students were not familiar with new formats for final assessments or the teacher delivering them.

#### 6. Determine how applied academic course fits into the sequence of courses

All case studies reported that the applied academic content in the CTE courses was designed to complement the standard academic courses and provide students the opportunity to see the applicability and relevance of the academic content in real-world situations. In the case of math, the credit offered through a CTE program was often seen as an option to Algebra II for a third year of math credit. One program considered Algebra I and Geometry as prerequisites to the applied math while another presented similar content in an applied context. One program offered applied science credit for the last two courses of a four-year sequence to allow students to become comfortable with the applied nature of the curriculum and to build skills related to final work sample and oral exam requirements. One study reported that the collaborative effort to design complementary lessons led to an academic teacher using some of the CTE lessons in her course. Two studies reported that students learned of the credit option and course sequence from counselors or teachers.

#### 7. Determine means of assuring licensing requirements are met

Four of the five case studies reported that they offered applied academic credit for their programs, most of them because the CTE teacher is not endorsed to award standard academic credit. One study that had a CTE teacher who was endorsed to award standard academic credit chose to award applied academic credit because of the applied nature of the coursework. The one program that offered standard academic

credit by proficiency reported that they could do so only through close collaboration between the CTE teacher and the academic teacher, which was a challenge to maintain. Applied academic credits are acceptable as a means of fulfilling local high school graduation requirements and are accepted by community colleges; however, they are typically not accepted by the Oregon University System or National Collegiate Athletic Association schools and may not meet the federal definition of “core” courses. All studies reported that this presents a limitation to providing academic credit through applied coursework. One study named their applied credit Engineering Math in the hopes of alleviating this difficulty.

### *Student Response*

In each of the cases described in this study, the applied academic options were developed as alternatives to more traditional subject area courses by covering higher-level academic content in applied settings. The student response to these options was difficult to evaluate because most of the options were in their initial stages of development and only a small number of students were involved. Although each of these options needs more time and participants to be properly evaluated, preliminary feedback from students who participated was solicited; this yielded mixed reviews. Some students appreciated the opportunity to learn the academic content in the applied setting, but some did not. Others hardly noticed the increased academic emphasis, perhaps because of the considerable amount of core subject content inherent in their CTE courses.

### **Conclusion**

While this study provides some insight into how schools in Oregon are developing applied academic credit options for their students, it is by no means a complete account of what is being done in this regard. The cases included in this study represent some of the more successful attempts at developing these options. A more thorough understanding of the issues involved in implementing applied academic options could be attained by comparing the experiences of a larger number of cases that better represent the range of Oregon schools and the populations they serve, as well as by using a longitudinal study design that examines processes and tracks student outcomes. Follow-up studies focusing on certain aspects of the development process in more detail could also prove helpful. In particular, it would be useful to know more about how the CTE courses were changed to more explicitly align with higher-level academic content, including examples of syllabi, lessons, and other instructional guides as well as a detailed description of how the curriculum, instruction, and assessments for each option were developed.

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## Resources

Guidelines, Scenarios, and Resources for Offering Credit in Applied Academics – This document provides guidance on how to award credit that is consistent with all current state and federal rules. Besides “Guidelines for Assigning Credit in Applied Academic Courses” (see below), it includes “Overview of Applied Academics,” “Teacher Licensure Considerations,” and “Scenarios Related to Applied Academic Credit.”

For the most updated version of Guidelines, Scenarios, and Resources for Offering Credit in Applied Academics, and more resources on applied academics (including further information about each of the case studies), go to <http://www.ode.state.or.us/search/page/?id=1626>.

Further definition of the steps provided as a guide to developing applied academic credit options (“Guidelines for Assigning Credit in Applied Academic Courses,” from Guidelines, Scenarios, and Resources for Offering Credit in Applied Academics):

1. Form a work team with teachers from all relevant subject areas. The team must include a teacher who has the proper academic subject license.
2. Using appropriate Oregon Content Standards, skill sets, or other state or nationally recognized standards, review the applied academic course and instructional materials to ensure they include substantial academic content.
3. As a team, determine the amount of academic credit that may be offered based on the academic standards explicitly addressed in the course content and standards that will be addressed using materials beyond those currently used in the course.
4. Plan ways for students to meet all content expectations using supplemental materials if necessary. Additional methods could include online courses, tutorials, or projects.
5. Develop and document the curriculum for each course that will be credit-bearing, and specify the assessments to be used to measure student progress toward proficiency in the academic standards. Assessments can be based on state tests or work samples, produced locally, or taken from other sources, as long as they are aligned with the content being taught.
6. Determine how the applied academic course will fit into a sequence of courses so that students have an opportunity to learn content related to all Oregon Content Standards. The Student Plan and Profile should include the guidance students need to assure they have taken the appropriate sequence of courses.
7. Determine the appropriate means of ensuring that both federal and state licensure requirements are being met by instructors. This may involve awarding standard academic credit, credit for proficiency, or credit for CTE related instruction.

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