

# **Research Study of Texas Dual Credit Programs and Courses**

**Submitted to: Texas Education Agency  
March 2011**



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## CREDITS

### **American Institutes for Research**

20 North Wacker Drive, Suite 1231`  
Chicago, IL 60606-2901  
800-356-2735 • 312-288-7600  
[www.air.org](http://www.air.org)

### **Gibson Consulting Group, Inc.**

1221 South MOPAC Expressway, Suite 355  
Austin, TX 78746  
512-328-0884  
[www.gibsonconsult.com](http://www.gibsonconsult.com)

### *Contributing Authors*

#### **American Institutes for Research**

Lawrence B. Friedman, Ph.D.  
Lisa Hoogstra, Ph.D.  
Andrew Swanlund  
Shazia Miller, Ph.D.  
Manyee Wong, Ph.D.  
Daniel O'Brien  
Natalie Tucker

#### **Gibson Consulting Group, Inc.**

Greg Gibson  
Joseph Shields  
Cheyanne Rolf  
Elissa Yeates

### *Submitted to*

Texas Education Agency  
1701 North Congress Avenue  
Austin, Texas 78701-1494  
Phone: 512-463-9734

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## Executive Summary

As part of Texas' efforts to promote high school success and college readiness, legislation was passed in 2006 (HB1, §5.01, 79th Texas Legislature, 3rd Called Session) that requires each local education agency (LEA) to implement a program under which students may earn the equivalent of at least 12 semester credit hours of college credit in high school. The result of that legislation, Texas Education Code (TEC) §28.009, was amended in 2007 to stipulate that the college credit may be earned through Advanced Placement (AP) courses, International Baccalaureate (IB) courses, local and statewide articulated courses, and courses for dual credit.

In Texas, courses for dual credit are college courses offered by an institution of higher education (IHE) for which high school students receive simultaneous academic credit from both the college and the high school upon course completion. Texas LEAs and IHEs create contractual agreements to offer courses for dual credit. These contracts vary in their details and degree of specificity. Moreover, an IHE may have separate agreements with multiple LEAs, each with different terms. Similarly, an LEA may have agreements with more than one IHE. Currently, more than 90% of courses for dual credit are offered by Texas community colleges.

Cost agreements also vary from LEA to LEA. Some IHEs support dual credit programs by reducing or waiving tuition and fees for dual credit students; some LEAs pay for the students, either out of local funds or from their high school allotment; and some communities have established privately funded scholarship programs for dual credit activities. When these funding sources are not available, students and parents pay out-of-pocket for the courses.

## Study Purpose and Research Objectives

The Texas Education Agency (TEA), in collaboration with the Texas Higher Education Coordinating Board (THECB), contracted with American Institutes for Research (AIR) and Gibson Consulting Group, Inc. to conduct a research study of dual credit programs and courses in Texas. The study has three primary objectives, which are to:

1. Investigate the state context for dual credit programs and courses delivered during the 2009–10 academic year.
2. Conduct an analysis of the how the delivery of courses for dual credit are funded in Texas and determine the cost of dual credit programs and courses.
3. Make action-oriented, pragmatic policy recommendations to the 82nd Texas Legislature regarding dual credit programs and courses.

## Data and Methods

Data from several sources were used to address these research objectives, including (1) extant data from TEA on student enrollment in courses for dual credit throughout the state and the

characteristics of these students and their high schools; (2) data obtained from telephone surveys of responding key administrators or staff from a purposive sample of IHEs, LEAs, and high schools, the design for which involved sampling from 12 dual enrollment “clusters” made up of IHEs, LEAs, and high schools throughout the state that supply and make use of courses for dual credit through contractual relationships with each other; (3) extant data from THECB on the number of student semester credit hours attempted by high school students enrolled in college courses for dual credit; and (4) supplementary course and financial data on dual credit program costs and revenues collected from the study sample of IHEs, LEAs, and high schools.

A total of 15 IHEs were sampled—12 community colleges, and three universities that are major providers of courses for dual credit within the state; 48 high schools and their corresponding LEAs also were sampled. Administrators from all 15 sampled IHEs completed surveys. A total of 36 administrators from sampled LEAs and 34 administrators or staff from sampled high schools completed surveys. For the supplemental course and financial data collection, 14 IHEs (11 community colleges and three universities), 22 LEAs, and 24 high schools provided usable data (defined as data that were complete and reasonable).

To examine the state context of dual credit programs and courses (research objective 1), statewide data from the 2007–08, 2008–09, and 2009–10 academic years were analyzed to determine the extent to which there has been growth in enrollments in courses for dual credit. Additional analyses examined the characteristics of students who enrolled in courses for dual credit; the school characteristics that are predictive of enrollment in courses for dual credit; the types of courses that available to, and taken by, students for dual credit; and the performance of students in these courses and on the 2010 Texas Assessment of Knowledge and Skills (TAKS). Survey data from sampled IHEs, LEAs, and high schools provided additional data on the perceived quality of courses taken for dual credit; the various modes of delivery for these courses (e.g., at a community college, four-year university, high school, or via distance education); and the institutional policies and requirements that exist with regard to dual credit student eligibility and supports (e.g., student advising/counseling, financial support) and dual credit faculty benefits.

To examine the funding for and cost of dual credit programs and courses during the 2009–10 academic year (research objective 2), extant data from THECB and supplemental course and financial data from sampled IHEs, LEAs, and high schools were examined to (1) provide statewide funding estimates for courses for dual credit; (2) identify the instructional cost of courses for dual credit per student credit hour; (3) examine the variance in the cost of courses for dual credit by type of IHE and various attributes of high schools; and (4) determine the cost effectiveness of courses for dual credit by delivery mode.

A summary of key findings from the study is presented below. A set of policy recommendations on dual credit programs and courses that are based on these findings (research objective 3) is then presented.

## Summary of Key Findings

### The State Context of Dual Credit Programs and Courses

**Statewide Enrollment Patterns.** Findings from statewide data on enrollment in courses for dual credit indicate growth in enrollments over time. Total state enrollment in courses for dual credit rose from 71,803 in 2007–08 to 94,232 in 2009–10, an increase of 31%. An examination of enrollment in courses for dual credit by student characteristics revealed different patterns of participation among student subgroups. For example, male students were underrepresented among students who were enrolled in courses for dual credit relative to their representation within the high school population as a whole; white students were overrepresented, and other racial/ethnic groups, particularly African-American students, were underrepresented relative to their representation within the high school population as a whole.

An analysis of school characteristics that were predictive of enrollment in courses for dual credit also revealed differences in participation rates among schools with students who were enrolled in courses for dual credit. For example, schools located in rural areas and schools that had higher percentages of African-American students, limited English proficient (LEP) students, and students taking AP/IB exams had lower enrollment rates in courses for dual credit, controlling for school size and other school characteristics included in the analysis. Differences in participation rates in courses for dual credit may reflect differences in academic achievement among various subgroups. Because students must meet academic eligibility requirements to enroll in courses for dual credit, student subgroups that have lower average achievement are likely to be underrepresented among students who enroll in courses for dual credit.

**Course Availability and Course-Taking Patterns.** Within the state as a whole, a wide variety of courses for dual credit is available to students in both academic and career or technical areas. An analysis of enrollment in courses for dual credit by subject area revealed that approximately 70% of courses taken by high students were in core academic subject areas such as social studies/history (31%), English language arts (26%), mathematics (8%), and science (4%); 20% of courses were in career or technical education and computer science. Approximately 6% of the courses fell into the category of “other.”

An examination of enrollment in specific types of dual enrollment courses by student characteristics revealed different patterns of course enrollment by student subgroups. For example, African-American and Hispanic students took greater concentrations of coursework for dual credit in career or technical education and computer science and lower concentrations in core academic subjects such as social studies/history and English language arts compared with white and Asian students. Economically disadvantaged students also took greater concentrations of coursework in career or technical education and computer science than students who were not economically disadvantaged. Such differences may reflect long-standing achievement gaps among students in these subgroups. The student eligibility requirements for career or technical education courses are lower than those for core academic courses. To qualify to enroll in career or technical education courses or computer science courses, students only have to meet the passing standard on the Texas Assessment of Knowledge and Skills (TAKS); to qualify to

enroll in academic courses, students must satisfy the more rigorous dual credit eligibility standards on TAKS or meet Texas Success Initiatives (TSI) requirements.<sup>1</sup>

**Student Performance.** The findings regarding student performance in courses for dual credit were generally positive. Virtually all students (99.9%) who enrolled in courses for dual credit were reported as completing these courses, and most (94% or more across different subject areas) also received passing grades for the affiliated high school course. At least 95% of students who were enrolled in courses for dual credit in 2009–10 also met basic TAKS proficiency standards in all subject areas on the 2010 TAKS.

The percentage of students who were enrolled in courses for dual credit in 2009–10 and were commended on the 2010 TAKS varied both by course type and TAKS subject area. Overall, a smaller percentage of students who were enrolled in computer science courses and career or technical courses for dual credit received a commended rating on TAKS subject area assessments compared with students who were enrolled in other courses. For example, among students who were enrolled in career or technical courses, 29% were commended in reading, 27% were commended in math, 18% were commended in science, and 54% were commended in social studies. In contrast, among students who were enrolled in mathematics courses, 67% were commended in reading, 70% were commended in math, 48% were commended in science, and 85% were commended in social studies. These differences again reflect differences in student eligibility requirements between academic courses and career or technical courses and computer science courses.

The percentage of students who were enrolled in courses for dual credit and who met dual credit eligibility standards or TSI exemption standards in English language arts and mathematics also varied by course type and TAKS subject area. Dual credit eligibility standards and TSI exemption standards are defined in relation to student performance on the TAKS. In particular, to meet standards to take academic courses for dual credit in reading- and writing-related areas, students need to score at least 2200 on TAKS-English Language Arts and receive a score of at least 3 on their written essay. To take mathematics courses for dual credit, students need to score at least 2200 on TAKS-Math. Overall, the percentage of students who met these standards in academic courses was higher for students who were enrolled in core academic courses (English language arts, mathematics, science, and social studies/history) than for students who were enrolled in career or technical courses and computer science courses. For example, among students who were enrolled in career or technical courses, 60% met eligibility standards for academic courses on TAKS-English Language Arts, and 66% met eligibility standards for academic courses on TAKS-Math. In contrast, among students who were enrolled in mathematics courses, 86% met eligibility standards in English language arts and 97% met eligibility standards in mathematics. Again, differences in the percentage of students meeting eligibility standards reflect differences in requirements between academic courses and career or technical courses and computer science courses.

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<sup>1</sup> Beginning in the 2011–12 academic year, TEA will begin implementation of the State of Texas Assessments of Academic Readiness (STAAR) in place of the current TAKS assessment. This shift will necessitate a reformulation of the eligibility standards for enrolling in courses for dual credit.

It should be noted that beginning in the 2011–12 academic year, TEA will begin implementation of the State of Texas Assessments of Academic Readiness (STAAR) in place of the current TAKS assessment. This shift will necessitate a reformulation of the current benchmarks for determining college readiness and dual credit eligibility standards. Therefore, these impending changes should be considered before any policy changes are implemented based on student performance findings.

### **Survey Findings from Sampled IHEs, LEAs, and High Schools**

Findings from surveys of sampled IHEs, LEAs, and high schools are consistent with the statewide findings with regard to the types of courses that are available to high school students for dual credit (e.g., core academic courses; electives in fine arts, foreign languages, and computer science; and career or technical education courses). Most respondents reported that courses for dual credit were offered in core academic subjects such as social studies/history. The majority of respondents from IHEs, LEAs, and high schools also reported that career or technical education courses were offered for dual credit. Respondents from IHEs more frequently reported that elective courses were offered than respondents from LEAs and high schools, perhaps because of the greater availability of qualified faculty at IHEs to teach these courses.

Respondents generally reported that several measures were taken to ensure the quality of courses for dual credit, including coordination between IHEs and LEAs to align courses for dual credit with Texas Essential Knowledge and Skills (TEKS) standards. Respondents from LEAs and high schools also reported monitoring teacher quality, the curriculum, and pedagogy of courses offered for dual credit to ensure course quality.

Overall, respondents reported that courses for dual credit were consistently rigorous across courses and that courses for dual credit offered on high school campuses were as rigorous as those offered on college campuses. Among high school respondents who provided comparative ratings of AP courses and courses for dual credit, 42% reported that AP courses and courses for dual credit were equally rigorous, 45% reported that AP courses were more rigorous than courses for dual credit, and 13% reported that courses for dual credit were more rigorous than AP courses. Among high school respondents who provided comparative ratings of IB courses and courses for dual credit, 50% reported that IB courses and courses for dual credit were equally rigorous, 38% reported that IB courses were more rigorous than courses for dual credit, and 13% reported that courses for dual credit were more rigorous than IB courses.

Survey respondents reported that a variety of institutional policies and requirements exist with regard to student eligibility for enrollment in courses for dual credit and student support services for enrollees. Consistent with state requirements for enrollment in courses for dual credit, most respondents indicated that students had to receive a minimum score on a standardized test and be at a specific grade level (e.g., Grade 11 or 12) before they could enroll in a course for dual credit. Most respondents also reported that students had to receive approval from their school and meet the IHE's standard admission requirements to enroll in courses for dual credit.

Respondents indicated that several types of information and supports were made available to students who enrolled in courses for dual credit or were considering enrolling, including publicizing the availability of their dual credit programs to all students and providing counseling specific to courses for dual credit. Most IHEs also reported that they provided specialized training to high school staff related to the dual credit program.

Overall, the survey findings indicate that IHEs, LEAs, and high schools use multiple means to ensure the quality and rigor of courses for dual credit and have established policies to ensure that students meet dual enrollment eligibility requirements and are provided with information and counseling supports specific to courses for dual credit. However, among respondents who provided comparative ratings of AP, IB, and dual credit courses, a sizeable percentage viewed AP courses as more rigorous than courses for dual credit; a similar percentage viewed IB courses as more rigorous than courses for dual credit. These findings suggest that there may be a need for greater monitoring of the quality and rigor of courses for dual credit. In addition, responses to questions about student eligibility requirements for enrolling in courses for dual credit suggest that some administrators of dual credit programs may not be familiar with all state eligibility requirements. For example, although the state requires students to meet dual credit eligibility standards by achieving a minimum score on a standardized test such as TAKS, only 80% of administrators at IHEs reported that students must meet this requirement to enroll in courses for dual credit. As indicated in a recent audit report on dual credit programs in Texas (Texas State Auditor's Office, 2010), some IHEs and LEAs may need to improve both their monitoring and evaluation of courses for dual credit and as well as their procedures for ensuring compliance with state eligibility requirements.

## **The Cost of Dual Credit Programs**

**Statewide Funding Estimates for Courses for Dual Credit in Texas.** Based on an exploratory analysis of revenue and expenditures data for the delivery of courses for dual credit to high school students at LEAs and community colleges in Texas, dual credit program funding/revenue are estimated at approximately \$180 million for the 2009–10 academic year. The state of Texas covered for the majority (61%) of costs associated with courses for dual credit for high school students through state funding (e.g., Foundation School Program, State Compensatory Education funds, High School Allotment funds, formula and discretionary grants, etc.) to LEAs (36%) and state appropriations to community colleges (25%). A substantial proportion (32%) of state funds used by LEAs to support dual credit programs went toward tuition and fees (19%) and textbooks (13%) for courses for dual credit.

Revenue generated from students and their families through the payment of tuition and fees to community colleges and the purchase of course textbooks accounted for just over 18% of the 2009–10 funding for courses for dual credit delivered to students at LEA and community college campuses. Due to LEA subsidies of tuition/fees and textbook costs (described above) and community college tuition waivers documented in articulation agreements with LEAs, this figure of 18% for high school students enrolled in courses for dual credit is substantially lower than the estimated 36% of course costs (excluding textbook costs) that are covered by community college students in general.

Almost 13% of the funding for dual credit programs was accounted for by local and other funds used by IHEs, and approximately 6% of the funding came from local and other funding sources used by LEAs. Federal funding accounted for a small proportion of funding for dual credit programs in Texas (2%), and this funding came primarily in the form of grants to LEAs.

**Instructional Cost Per Student Credit Hour.** For the study sample, the average program cost per credit hour attempted for dual credit courses at IHEs was approximately \$125, with 87% representing course delivery costs and 13% representing program administration costs. The vast majority of course delivery costs are accounted for by instructional payroll (62%) and textbooks (37%). At high schools, the average program cost per credit hour was \$149, virtually all of which related to instructional payroll (85%) and textbooks (15%). Instructional costs per credit hour varied widely—from \$80.11 to \$280.74 among sampled high schools and from \$88.70 to \$235.33 among sampled IHEs. The most significant factor contributing to higher costs at high schools was average class/section size, which was 15.7 for sampled high schools and 28.4 for sampled IHEs.

**Variance in the Cost of Courses for Dual Credit by Type of IHE and Various Attributes of High Schools.** Within the study sample, program cost per credit hour for courses for dual credit were substantially higher at four-year universities (\$189) than at community colleges (\$120). This variation was largely due to higher professor salaries and administrative costs at four-year universities, and partially offset by larger classes at four-year universities. At the high schools sampled, cost data were analyzed for lower level groupings based on enrollment, percentage of economically disadvantaged students, and state accountability ratings. The costs per credit hour was slightly lower for larger high schools (\$145) than smaller high schools (\$154) in the sample. High schools with higher proportions of economically disadvantaged students than the state average had lower costs per credit hour attempted for dual credit courses (\$138) compared with campuses with smaller proportions of economically disadvantaged students (\$162). There was an inverse relationship between high school accountability ratings and cost per credit hour – the higher the rating, the lower the cost. Average class size was the most dominant factor in explaining variances of all high school costs. Also, several high schools with larger dual credit programs reported zero costs for textbooks.

**Cost Effectiveness of Courses for Dual Credit by Delivery Mode.** For the study sample, the cost per credit hour for courses for dual credit delivered in an IHE classroom was \$103, compared with \$125 for the delivery of IHE online courses. The proportion of time spent by instructors for online courses (reported as a percentage of classroom effort) was actually greater than for face-to-face instruction (perhaps due to greater time spent in individual communication with students taking online courses). Also, the average class/section size for online courses was smaller than for courses offered in the classroom. For high schools, the cost of online delivery was also higher than classroom delivery, primarily due to differences in class/section size.

## Recommendations

Based on a review of the study findings, the following policy recommendations about the supply of, demand for, and access to programs and courses for dual credit are offered for consideration by the 82nd Texas Legislature. The recommendations are organized by key policy questions posed by TEA in the request for proposals to conduct the current study of Texas dual credit programs and courses.

1. How can the state provide each student the opportunity to earn 12 semester credit hours of college credit before graduating high school?

This question is primarily about the supply of courses and programs for dual credit needed so that each student has the opportunity to earn 12 semester credit hours of college before graduating high school. Findings suggest that the supply of courses for dual credit was generally adequate for the demand during the three-year-period covered by the study (2007–08, 2008–09, and 2009–10). However, the study also found that enrollment rates varied by subjects, student demographic characteristics and academic performance, and school demographic characteristics and Academic Excellence Indicator System (AEIS) status. These findings suggest the possibility of inadequate supply for the demand where students did not have opportunity to enroll in courses or programs for dual credit in which they wanted to enroll. In other words, enrollment rate differences for courses for dual credit between students from schools differing in location, size, or performance may be due to a difference in course availability or number of openings in courses to students from the differing schools.

It is recommended that the 82nd Texas Legislature consider the state’s role in ensuring that there is an adequate supply of courses and programs for dual credit—adequate in amount and adequately distributed to eligible high schools students in the state—so that each student has the opportunity to earn 12 semester credit hours of college before graduating high school. It is suggested that the state should undertake or encourage the development and implementation of a mechanism to estimate demand for programs and courses for dual credit throughout the state. The state also might play a more extensive role such as developing and providing courses and programs for which there is a need, or encouraging or funding through competitively awarded contracts these and other supply-side activities.

2. How can the state promote the ability of students to access quality dual credit programs and courses?

The evaluation team understands this question to be about high school students’ demand for and access to quality courses and programs for dual credit, in other words, students’ interest in taking advantage of opportunities to enroll in high-quality courses and programs for dual credit, and their ability to do so successfully.

First, the study found no evidence that dual credit courses or programs were perceived to be of lower quality than either similarly titled high school or IHE courses. However, as noted above, the study also found that enrollment rates varied by subjects, student demographic characteristics and academic performance, and school demographic characteristics and AEIS status. These findings suggest the

possibility of inadequate demand for the supply where students did not enroll in courses or programs for dual credit for which they had an opportunity to enroll. For instance, it is likely that the proportion of students in some schools who were not inclined or were not encouraged to enroll in courses for dual credit was higher than the proportion in other schools differing in location, size, or performance.

The state has three areas where it can focus its efforts to promote students' interest in and ability to access quality dual credit programs and courses. It can focus on increasing student interest and ability, on improving high school campuses' activities to increase student interest and support student efforts, and on improving LEAs' support for student and campus efforts. It is suggested that the legislature support the identification and dissemination of promising practices in each of the three areas, and possibly incentivizing implementation of these practices as well. Promising practices worthy of consideration for support in the three areas include the following:

1. Increasing student interest and ability
  - Increasing the proportion of Grade 11 and 12 students who meet or exceed the academic performance standards of the Texas Success Initiative
  - Increasing the knowledge of dual credit value and options, enrollment procedures and timelines, subsidies, and courses available
2. Improving high school campus activities
  - Increasing student interest in courses and programs for dual credit
  - Disseminating dual credit information and counseling students into appropriate courses and programs
  - Scheduling and arranging the logistics of programs and courses for dual credit
  - Increasing student engagement, persistence, and performance in courses and programs for dual credit delivered on campus, online (through LEA-based online programs or the Texas Virtual School Network), and at other locations
3. Improving LEA support
  - Matching the supply of and demand for courses and programs for dual credit through articulation agreements and LEA dual credit offerings
  - Developing strong articulation agreements
  - Developing long-term partnerships with LEAs seeking dual credit courses and programs for their students, and with providers of dual credit courses and programs
  - Subsidizing student costs of enrollment and participation in courses for dual credit

The current financial condition and circumstances of public education in Texas increase the likelihood that existing funding mechanisms for courses and programs for dual credit enrollment will lead to supply outpacing demand. As LEAs face budget shortfalls, the use of state funds (such as the Foundation School Program, High School Allotment, and State Compensatory Education funds) previously used to support

the delivery of courses for dual credit may be diverted to pay for core education services. The state should assess thoroughly the ability of LEAs to continue providing adequate financial support for courses and programs for dual credit during the next two school years, and address issues identified by the assessment.

### 3. How can the state ensure efficient use of its resources regarding dual credit programs and courses?

This is a question about two kinds of efficiencies: the efficient alignment of the state’s supply of high-quality courses and programs for dual credit and its high school students’ demand for and access to the courses and programs, and the reduction of delivery and participation costs without reducing effectiveness. The above recommendations responding to research subquestions 1 and 2 will contribute to improvements in efficiency of both kinds. The evaluation team also suggests that the legislature consider the following strategies for increasing both kinds of efficiency:

- Alignment of supply and demand
  - Leveraging and focusing courses and programs for dual credit by aligning dual credit more closely to the state’s education reform, especially in the areas of secondary and postsecondary education
  - Increasing the knowledge providers of transferable courses and programs for dual credit have of the demand for the courses and programs by students and their parents and guardians, their high schools, and their LEAs at the state, regional, municipal, and individual levels
  - Increasing the knowledge students, their parents and guardians, their high schools, and their LEAs have of the supply of transferable courses and programs for dual credit and of dual credit providers at the state, regional, municipal, and individual levels
  - Monitoring supply-side performance – how effectively and efficiently courses and programs for dual credit are provided – against criteria established by the state, and making public the results
  - Monitoring demand-side performance – how effectively students perform in courses and programs for dual credit and how effectively and efficiently high schools and LEAs support students’ enrollment and participation in the courses and programs – against criteria established by the state, and making public the results
- Reducing costs without reducing effectiveness through:
  - Incentivizing IHEs, LEAs, and other dual credit course providers, where appropriate, to meet minimum instructor/student ratios for courses enrolling students for dual credit<sup>2</sup>
  - Incentivizing IHEs, LEAs, and other dual credit course providers to meet minimum instruction cost/administration cost ratios for courses and programs enrolling students for dual credit

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<sup>2</sup> The incentive model may need to differ based on the demographics, size, and location of the LEA.

- Incentivizing strategies to reduce the cost for students and their parents or guardians of enrolling and participating in a course for dual credit, such as book recycling programs, bulk purchases of books, carpooling, and discount gas coupons

This study relied extensively on existing data about the courses and programs for dual credit delivery, their providers and participants, and their costs and framing policies from TEA and THECB. Their support for this study is an example of their close and productive relationship in developing, operating, and using the results of their complementary data systems to gain a better understanding of courses and programs for dual credit. The continued successful development and expansion of the courses and programs for dual credit as well as increases in effectiveness and efficiency through the above recommendations or otherwise will require more extensive, robust, and systematic data collection and analysis against performance metrics, and reporting and application of findings from the analysis. A final recommendation is for the legislature to support the further development, analysis, and use of such data.

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## Introduction

This report examines the state context of dual credit programs and courses delivered in Texas during the 2009–10 academic year and the cost of these courses. Analyses include the numbers of high school students who enrolled in courses for dual credit, the types of courses for dual credit offered, the delivery modes for these courses, dual credit course and program policies, and the cost of dual credit programs and courses.

Findings for the current report are based on the following data sources: (1) extant data from the Texas Education Agency (TEA) on student enrollment in courses for dual credit throughout the state and the characteristics of these students and their high schools; (2) telephone surveys administered to program administrators from a sample of institutions of higher education (IHEs), local education agencies (LEAs),<sup>3</sup> and high schools throughout the state that offer dual credit programs and courses; (3) extant data from the Texas Higher Education Coordinating Board (THECB) on the number of student semester credit hours attempted by high school students enrolled in college courses for dual credit, average professor salary, and data on cost per contract hour per program area; (4) supplementary course and financial data on dual credit program costs and revenues collected from the study sample of IHEs, LEAs, and high schools; and (5) data from eFACTS+, an online database containing financial, student, and staff information for every LEA and campus in Texas.<sup>4</sup>

An overview of the research literature on dual credit programs and policies is first presented, followed by a review of the history and legislation background of dual credit programs and courses in Texas. The purpose and objectives of the current study are then described.

### Overview of the Research Literature on Dual Credit Programs and Policies

Courses for dual credit and dual enrollment opportunities are innovative learning options that have become increasingly popular during the past decade. A growing body of research on the current state of participation and policy trends, potential impacts, and costs of these higher learning options has contributed to an understanding of the key roles they can play in improving student learning and encouraging postsecondary success.

#### The Push for Dual Credit

Each year, thousands of high school students take advantage of dual credit or dual enrollment opportunities. Surveys by the National Center for Education Statistics (NCES) indicate that, nationally, during the 2002–03 12-month academic year (the last year for which data are available), 57% of all colleges surveyed stated that high school students were taking their courses, either within or outside of

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<sup>3</sup> Throughout this report all references to LEAs include public school districts and/or open-enrollment charter schools.

<sup>4</sup> The e-Facts+ database is maintained by the Texas Association of School Business Officials. The database is available online at <http://www.tasbo.org/resources/efacts>. *FACTS* is an acronym for Financial Analysis and Comparison of Texas Schools.

dual credit programs. Participation was significantly higher at public two-year colleges, of which 98% of those surveyed reported participation. During the course of the 2002–03 academic year, approximately 5% of all U.S. high school students were enrolled in college-level courses through postsecondary institutions. Of these high school students taking courses for college credit, 84% did so through a dual enrollment program (Kleiner & Lewis, 2005).

Although the NCES surveys did not measure growth or changes in dual enrollment participation nationally, several states, including Texas, Florida, Ohio, and Georgia, have reported substantial increases in the numbers of students who enrolled in courses for dual credit during the last decade (see, e.g., Cubberley, 2009; Hoffman, Vargas, & Santos, 2009; Lynch & Hill, 2008; Washington State Board for Community and Technical Colleges, 2009). In Texas, dual credit enrollment increased from 11,921 in fall 1999 to 90,346 in fall 2010 (THECB, 2011).

Growth in student participation in dual enrollment programs largely can be linked to the expansion of state policies that encourage participation in dual enrollment opportunities (Karp, 2007). Since 1976, 40 states have adopted policies establishing and regulating dual enrollment and dual credit programs. The greatest increase in state programs occurred between 1990 and 2004 when 23 states adopted dual enrollment programs—a 35% increase from the previous 14-year period (Mokher & McLendon, 2009). States continue to make dual enrollment programs a key component of their high school reform efforts, and the federal government also supports expanded access to dual enrollment, further increasing opportunities across the country.

### **The Impact of Dual Credit**

Educators and policymakers suggest that engaging high school students in college-level work is a promising method for better preparing them for college success (see, e.g., Hoffman et al., 2009). This approach may prove beneficial for diverse groups of students, including those who may not envision themselves as college bound. Despite increased opportunities for high school students to enroll in courses for dual credit, there is a significant lack of research pointing to its effectiveness (Karp & Jeong, 2008). The most notable research comes from a study by Karp, Calcagno, Hughes, Jeong, and Bailey (2007) on dual enrollment in Florida and New York City, which found a multitude of impacts on participating students. Controlling for observable student and school characteristics, the researchers identified positive relationships between dual enrollment participation and students' likelihood of the following:<sup>5</sup>

- Earning a high school diploma (Florida only).
- Enrolling full-time at a postsecondary institution.
- Initially enrolling in a four-year institution.
- Remaining enrolled at a postsecondary institution two years after high school graduation.

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<sup>5</sup> The study conducted by Karp et al. (2007) examined the relationship between dual enrollment participation and various outcomes. The authors did not restrict their analysis to students who had completed courses for dual credit.

- Earning higher postsecondary grade point averages than their nonparticipating peers.
- Earning more postsecondary credits 3½ years after high school graduation than their nonparticipating peers—an indication of greater progress toward degree completion.

Additional research on the impact of dual enrollment is limited, although some studies in other states with established dual enrollment programs also have noted positive implications of the programs. In Georgia, for example, according to a 2008 report from Lynch and Hill, more low-income students were “taking college-level courses than would have been expected based on historical data” (p. 29). The researchers also note that high school students who were enrolled in courses for dual credit were more likely to transition into a two- or four-year Georgia public college. A recent research study conducted in Ohio found that dual enrollment students “appear to be more likely to go to college and even more likely to go to college in Ohio, are more likely to attend a university campus than a two-year college, seem to have higher retention rates and persistence, and seem to require less remediation” than their non-dual-enrollment peers (Cubberley, 2009, p. 82).

Support for dual enrollment and dual credit programs also comes from reports that dual enrollment can potentially lower high school dropout rates, increase participating student aspirations, and reduce the need for remedial coursework for participating students at the time of college entry (American Association of State Colleges and Universities, 2002; Boswell, 2001; Martinez & Bray, 2002). Dual enrollment also has the potential to provide practical information to high school students about the knowledge and skills they need to succeed in the postsecondary environment and to increase the number of historically underserved students who attend college (Hoffman et al., 2009; Karp, 2007). Finally, dual enrollment can benefit institutions, establishing channels of communication between K–12 and postsecondary systems regarding standards, assessments, curriculum, and the transition from high school to college (Hoffman et al., 2009).

### **The Cost of Dual Credit**

Significant challenges of dual credit programs are the high costs associated with these programs and the distribution of these costs among stakeholders (Boswell, 2001). Typically, dual credit programs are funded through federal, state, and local sources (Griffith, 2009). The major costs associated with dual credit are instructional costs, textbook costs, administrative costs, and transportation costs. Texas state law currently allows both LEAs and IHEs to collect per-pupil state funds for students pursuing dual credit (Texas Administrative Code §4.85(i)(1)). However, these funds may not cover the full cost of dual credit programs. The cost of tuition, fees, and textbooks, for example, may be paid by several parties, including parents, LEAs, and IHEs.

In the national NCES survey of postsecondary institutions (Kleiner & Lewis, 2005), institutions were asked to identify the various sources of tuition for courses offered for dual credit. Parents and students were identified as a source of tuition at 64% of the institutions; the college or university was a source of tuition at 38% of institutions (either through actual contributions or through tuition waivers); the high school or LEA contributed to tuition costs at 37% of institutions; and the state contributed to tuition costs at 26% of institutions. Compared to traditional four-year or private two-year institutions, community

colleges were less likely to report that parents or students paid for tuition. In Texas, the responsibility for paying these costs varies from LEA to LEA, as decisions are made at the local level through contractual agreements primarily with community colleges.

Requiring students and families to pay part of the cost of courses can create problems for participation in dual credit programs. For example, students from low-income families, perhaps the very at-risk students the LEA is targeting, may be precluded from participating if the cost is too high (Golann & Hughes, 2008). A study in four northeast Texas schools found that “financial reasons” was the top hindrance to eligible students enrolling in an English course for dual credit, as many eligible students reported that they could not afford the cost of the course (O’Connor & Justice, 2008).

Despite these funding issues, dual credit has been shown to benefit students, families, and states financially. Students participating in the program are able to earn credits toward a degree, potentially shortening their enrollment in a postsecondary institution, thereby lowering the cost of college and reducing the tax burden for taxpayers (Zeidenberg & Bailey, 2010). For example, the Washington State Board for Community and Technical Colleges (2010) estimated that the Running Start program saved approximately \$40 million for students and parents and \$50 million for the state.<sup>6</sup> These savings are similar to those reported for the 1999–2000 academic year (Andrews, 2004) and the 2003–04 academic year (Washington State Board for Community and Technical Colleges, 2004).

### **Using Research to Support Dual Credit**

Based on understandings of state contexts and funding structures, state education agencies can employ various policy strategies to serve their educational needs regarding dual credit enrollment in the best manner. These strategies can be used to address three goals: provide opportunities for dual credit, promote access to quality dual credit programs, and ensure efficient use of state resources for dual credit. Although the specific policy responses should be necessarily tailored to the state-specific context, research has identified a number of potential approaches regarding each of these three areas. For example, to provide opportunities for dual credit, policy approaches may include fostering strong collaborative relationships between secondary and higher education partners through governing councils or advisory boards (Golann & Hughes, 2008; Hoffman et al., 2009).

States also may consider expanding eligibility and access to these programs to students who are not typically targeted for dual enrollment, such as low-income students, academically lower performing students, and/or students from populations typically underrepresented in higher education. Some researchers and advocates argue that including these students in the programs can improve their

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<sup>6</sup> According to the 2010 report prepared by the Washington State Board for Community and Technical Colleges, there were 11,845 full-time equivalent (FTE) enrollments in the Running Start program in 2008–09. The authors of the report note that the program’s savings to the state and to parents and students “represent the tuition and state support costs of 11,845 FTE students attending a higher education institution for one year” (p. 4). They observe that “By allowing students to obtain high school and college credit simultaneously, Running Start reduces the amount of time students spend gaining college credentials, and reduces college costs for students and their families. In some cases, the dual-credit nature of the program allows students to complete their first two years of college at the same time they complete their junior and senior years of high school” (p.3).

performance by challenging them academically (Lords, 2000) and better prepare them for higher education by providing a preview of college work and minimizing the need for remediation once enrolled in an IHE (American Association of State Colleges and Universities, 2002; Golann & Hughes, 2008; Hoffman et al., 2009; Martinez & Bray, 2002). To further encourage participation, policies to reduce or completely eliminate the out-of-pocket costs for students and families are already in place in several states (Griffith, 2009).

Finally, the efficient use of state resources requires a full understanding of the outcomes of dual credit programs, for which, as previously mentioned, there is a dearth of information in the current body of research. Identifying more and less successful programs and initiatives may provide states with the information they need to continue to support or selectively fund programs. However, in order to do so, researchers need comprehensive, longitudinal, student-level data to measure program outcomes. Several researchers strongly advocate for states to put these systems into place, which can benefit both states and the national research community (Hoffman et al., 2009; Golann & Hughes, 2008; Karp & Jeong, 2008).

These policy responses represent examples of some states' current approaches to courses for dual credit. As previously noted, understanding the current context, participation, and costs of dual credit in a state can point the way to appropriate policies to address current needs efficiently. The outcomes of the current study will provide TEA, THECB, and the state legislature with actionable policy responses to support dual credit opportunities efficiently while meeting state education standards and expectations.

## **History and Legislative Background in Texas**

In Texas, courses for dual credit are college courses offered by a higher education institution for which high school students receive simultaneous academic credit from both the college and the high school upon course completion. Although college courses offered for dual credit are often taught on the secondary school campus, a high school student also can take a course on a college campus or via distance education. Courses for dual credit include academic and advanced technical courses that may serve as a pathway to academic degree programs or college-level workforce education credentials. Courses identified as college-level academic courses are those in the current edition of the THECB's Lower Division Academic Course Guide Manual (ACGM); those defined as college-level technical education courses are found in the current edition of the Workforce Education Course Manual (WECM). Texas students have been taking college courses for high school and college credit for more than two decades. THECB and TEA began tracking student dual credit enrollments in fall 1999. In 2003, Texas Education Code (TEC) §130.008 was amended to allow public high schools and IHEs to be eligible to receive funding for dual credit, eliminating the need for funding agreements between the Commissioner of Education and Commissioner of Higher Education. TEC §54.216 also was amended at this time to allow all public IHEs, not just community colleges, to waive tuition for courses for dual credit.

As part of Texas' efforts to promote high school success and college readiness, legislation was passed in 2006 (HB1, §5.01, 79th Texas Legislature, 3rd Called Session) that requires each LEA to implement a program under which students may earn the equivalent of at least 12 semester credit hours of college

credit in high school. The result of that legislation, TEC §28.009, was amended in 2007 to stipulate that the college credit may be earned through Advanced Placement (AP) courses, International Baccalaureate (IB) courses, local and statewide articulated courses, and courses for dual credit.

### **Contractual Agreements**

Texas LEAs and IHEs create contractual agreements—often referred to as institutional agreements, partnership agreements, or articulation agreements—to offer courses for dual credit. These contracts vary in their details and degree of specificity. Moreover, an IHE may have separate agreements with multiple LEAs, each with different terms. Similarly, an LEA may have agreements with more than one IHE. (See Texas State Auditor’s Office, 2010, for information on compliance with state rules and regulations.) Currently, more than 90% of courses for dual credit are offered by Texas community colleges. Texas has 50 community college districts (CCDs), and a CCD may include multiple campuses. If the local community college in the area is not meeting the dual credit needs of the LEA, the LEA may seek a community college in another CCD (see Senate Bill 2480, 81st Texas Legislature, TEC §130.008(d)).<sup>7</sup>

### **Funding**

As previously noted, THECB rules (Texas Administrative Code [TAC] §4.85) allow both LEAs and IHEs to collect state funds for students pursuing dual credit. For LEAs, funding is based on students’ average daily attendance, with LEAs able to count time spent on courses for dual credit toward a student’s attendance. IHEs receive state formula funding based on semester credit hours of instruction. Students who are still enrolled in high school are not eligible for state or federal financial aid. Decisions about who pays tuition, fees, and other costs for dual credit, such as textbooks and transportation, are made at the local level through the contractual agreements. Cost agreements vary from LEA to LEA. Some IHEs support dual credit programs by reducing or waiving tuition and fees for dual credit students under TEC §54.216; some LEAs pay for the students, either out of local funds or from their high school allotment; and some communities have established privately funded scholarship programs for dual credit activities. When these funding sources are not available, students and parents pay out-of-pocket for the courses (THECB, 2010).

### **Student Eligibility**

State rules regarding student eligibility to take courses for dual credit are aligned with the state’s Texas Success Initiative (TSI) statute (TEC §51.3062). These rules include standards for minimum test scores or performance in the areas of mathematics, writing, and reading that indicate students’ readiness to enroll in freshman-level college academic coursework. The dual credit eligibility standards and TSI requirements for dual credit students allow the state to balance access to dual credit programs with student readiness to benefit from these college courses.

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<sup>7</sup> This law does not apply to four-year colleges or universities. These institutions may offer courses for dual credit to anyone.

High school students who wish to take academic courses for dual credit must

- demonstrate exemption from the state’s TSI requirements by achieving a 2200 on the Exit-Level Mathematics Texas Assessment of Knowledge and Skills (TAKS) and/or a 2200 with a writing subscore of 3 on the Exit-Level English Language Arts TAKS, or through performance on specified ACT or SAT examinations;<sup>8</sup>
- satisfy the state’s TSI requirements through a test for TSI purposes; or
- meet dual credit eligibility standards by achieving a 2200 on the Mathematics Grade 10 TAKS and/or a 2200 with a writing subscore of 3 on the Grade 10 English Language Arts TAKS, or through achieving performance on specified PSAT or PLAN assessments.

Dual credit eligibility standards, aligned with TSI standards, are designed to allow high school sophomores the opportunity to show readiness to enroll in college-level coursework.

High school students who wish to take technical and workforce courses for dual credit must

- achieve the state’s high school graduation passing standard (2100) on specified Exit-Level TAKS tests; or
- achieve the passing standard (2100) on specified Grade 10 TAKS tests.

Students must be in the junior or senior year of high school to take courses for dual credit and may take up to two courses for dual credit a semester; exceptions are made for students with demonstrated outstanding academic performance and capability and for Early College High School students. More information about TSI and dual credit enrollment requirements is available in THECB rules (TAC §4.54, §4.55, §4.56, §4.57, and §4.85).

## **Study Purpose and Research Objectives**

TEA in collaboration with THECB contracted with American Institutes for Research (AIR) and Gibson Consulting to conduct a research study of dual credit programs and courses in Texas that addresses three primary research objectives. These objectives and related subquestions include the following:

1. Investigate the state context for dual credit programs and courses delivered during the 2009–10 academic year
  - a. Who enrolls in courses for dual credit?
  - b. What school characteristics predict enrollment in courses for dual credit?
  - c. What types of courses for dual credit are available?
  - d. What types of courses for dual credit do students take?
  - e. How does enrollment in courses for dual credit vary by student characteristics?
  - f. How do students who take courses for dual credit perform in these courses and on the TAKS?

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<sup>8</sup> Beginning in the 2011–12 academic year, TEA will begin implementation of the State of Texas Assessments of Academic Readiness (STAAR) in place of the current TAKS assessment. This shift will necessitate a reformulation of the eligibility standards for enrolling in courses for dual credit.

- g. Who makes decisions about the types of courses offered for dual credit?
  - h. How is the quality of courses offered for dual credit ensured, and what is the perceived quality of courses offered for dual credit?
  - i. What is the delivery mode of courses offered for dual credit?
  - j. What types of institutional policies and requirements exist with regard to dual credit student eligibility and supports (e.g., student advising/counseling, financial support) and dual credit faculty benefits?
2. Conduct an analysis of the cost of dual credit programs and courses
- a. What are the total payments made by various system participants and funders for courses for dual credit and who bears the financial burden for delivering courses for dual credit to high school students in Texas?
  - b. What are the instructional costs per student credit hour for hours attempted on high school and community college campuses?
  - c. What is the variance in the cost for courses for dual credit by type of IHE, LEA size, and student enrollment?
  - d. What is the cost effectiveness of courses for dual credit by various modes of delivery?
3. Make action-oriented, pragmatic policy recommendations to the 82<sup>nd</sup> Texas Legislature regarding dual credit programs and courses

## Data and Methods

To address the study's three primary research objectives, the research team selected a sample of IHEs, LEAs, and high schools from which to collect data through telephone surveys as well as through a supplemental course and financial data collection. In addition, the study team used data provided by TEA through its Public Education Information Management System (PEIMS) and Academic Excellence Indicator System (AEIS) as well as data provided by THECB through its Coordinating Board Management (CBM) report database. Sampling procedures and data sources used for the study are described below.

### Sampling Methodology

The sampling methodology for the phone survey and supplemental financial data collection was carried out through a two-stage process. The overall design involved sampling from 12 dual enrollment "clusters" made up of high schools, LEAs, and IHEs supplying and making use of courses for dual credit through contractual relationships with each other. The first stage of the sampling selected 12 CCDs. The second stage of the sampling selected four high schools and their corresponding LEAs within each sampled CCD. This sampling plan resulted in a sample of 12 CCDs, 48 high schools, and 48 LEAs. In addition, three universities with large numbers of students enrolled in online and traditional courses for dual credit were selected to provide additional context on dual credit programs in Texas. Supplemental cost data and telephone survey data were collected from these three universities. Because their draw of students was potentially statewide, no corresponding high schools or LEAs were selected.

The 12 CCDs were sampled based on a purposive sampling frame. The 12 CCDs were not selected randomly but to ensure variation on important characteristics of the CCDs.<sup>9</sup> In particular, CCDs were selected to include CCDs serving large and small geographical areas, serving areas near the Texas-Mexico border, and serving comparatively large and small Hispanic populations (by percentage of school enrollment). CCDs also were selected on the basis of the number of LEA partners they had (dual enrollment agreements).

- Seven CCDs served a large geographical area (many counties), and five CCDs served a small geographic area.
- Three CCDs were adjacent to the Texas-Mexico border.
- CCDs were selected that had low, moderate, and high populations of Hispanic students (ranging from 18% to 97%) and economically disadvantaged students (ranging from 22% to 85%) as determined by the percentage of students enrolled in schools served by the CCD.
- Four CCDs had a large number of LEA partners (28–55 partners); six CCDs had a moderate number of LEA partners (12–21 partners); and two CCDs had a low number of LEA partners (6–7 partners).

As mentioned earlier, in addition to the 12 community colleges selected through the process above, three universities that are major providers of courses for dual credit within the state were selected based on the recommendation of THECB.

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<sup>9</sup> These characteristics were determined based on input from TEA and THECB during the design phase of the study.

After the 12 CCDs were selected, 48 high schools (four per CCD) and their corresponding LEAs were sampled from among the schools and LEAs with CCD dual credit agreements within each selected CCD. Schools were selected based on a stratified random sample using the matrix shown in Table 1. The distribution of schools in each cluster was divided into thirds based on the number of dual credit enrollments within a school and the AEIS accountability rating of the school. One high school was selected from each cell in the matrix (within each CCD), with the stipulation that no two schools could come from the same LEA.

**Table 1. Selection Criteria for Sampled High Schools and Their Corresponding LEAs**

	<b>Lowest 1/3 of 2009–2010 AEIS ratings in the CCD</b>	<b>Highest 1/3 of 2009–2010 AEIS ratings in the CCD</b>
<b>Lowest 1/3 of 2009–2010 dual credit enrollments in the CCD</b>	One school/LEA per CCD, 12 schools/LEAs total	One school/LEA per CCD, 12 schools/LEAs total
<b>Highest 1/3 of 2009–2010 dual credit enrollments in the CCD</b>	One school/LEA per CCD, 12 schools total	One school/LEA per CCD, 12 schools/LEAs total

*Source:* Sampling Plan for the Research Study of Texas Dual Credit Programs and Courses (Texas Education Agency, 2011)

## Telephone Surveys

Three surveys were created for the purpose of investigating the state context of dual credit programs.<sup>10</sup> One survey was designed for dual credit program administrators at community colleges and universities. A second survey was designed for LEA administrators of dual credit programs. The third survey was designed for high school staff (e.g., administrators, counselors) with the most knowledge of or responsibility for the high school’s dual credit program.<sup>11</sup>

First, administrators from LEAs and high schools received a letter from TEA describing the study and requesting their participation. A TEA staff member then followed up with LEA and high school administrators by phone to request their voluntary participation personally. Similarly, a staff member from THECB contacted higher education administrators by phone to request their voluntary participation. After respondents agreed to participate in the study, the research team sent them an e-mail that included additional information about the study. Participants were sent an informed consent form for the telephone survey and a copy of the survey they were being asked to complete to provide them a chance to review the questions in advance. Instructions for completing the supplemental course and financial data requests and the Excel workbooks to be used for entering the requested data also were sent as attachments.

<sup>10</sup> These surveys were developed through modifying surveys originally created by the State of Texas Education Research Center at Texas A&M University. Some of the original survey items were retained, others were revised, and new items were added.

<sup>11</sup> In cases in which an LEA had only one high school and a high school staff member was responsible for administering the LEA’s dual credit program, both the LEA and high school surveys were administered to that staff person.

Of the 15 higher education institutions that were asked to participate in the study—12 community colleges and three universities—all completed surveys, for a 100% response rate. Of the 48 LEAs included in the study sample, 90% ( $n = 43$ ) agreed to participate in the study; of those who agreed to participate, 84% ( $n = 36$ ) completed a survey. Of the 48 high schools that were included in the study sample, 98% ( $n = 47$ ) agreed to participate in the study; of those who agreed to participate, 72% ( $n = 34$ ) completed a survey.

Surveys were administered by telephone, and responses were recorded in an online database with permission. The configuration of the survey database allowed for open-ended notes to be recorded by the staff administering the surveys. Surveys administered to IHE and LEA administrators took approximately 20–30 minutes to complete. Surveys administered to high school staff took approximately 45 minutes to complete.

The three surveys were designed to capture parallel information about the context of Texas' dual credit programs during the 2009–10 academic year, with varying emphasis based on role. The primary issues addressed by the surveys included the following:

- Subject areas in which courses for dual credit were offered
- How IHEs/LEAs/high schools identified which courses to offer
- Where students took courses for dual credit (e.g., their own or another high school, a community college, a four-year college or university, via distance learning)
- Faculty or staff members responsible for designing and teaching courses for dual credit
- Additional benefits, if any, received by instructors of courses for dual credit
- The perceived quality of courses for dual credit and measures taken to ensure course quality
- Student eligibility requirements for courses for dual credit
- Supports offered to students enrolled in courses for dual credit (e.g., advising, financial supports)
- Who was responsible for paying various costs associated with courses for dual credit such as tuition, textbooks, and fees (e.g., the LEA, the IHE, students/families)

Copies of the surveys are included in the appendices. See Appendix A for a copy of the higher education survey, Appendix B for a copy of the LEA survey, and Appendix C for a copy of the high school survey.

## Supplementary Financial Data

As a supplement to the telephone survey, data on courses for dual credit and course expenditures and revenues also were collected from the IHEs, LEAs, and high schools that were included in the study sample. The financial data request was designed to determine, at a course level, varying costs associated with dual credit programs as well as various sources of funding and revenues used to support these programs during the 2009–10 academic year. The types of data requested included the following:

- **Course information** (e.g., specific courses for dual credit offered by course name, number of course credit hours, number of course sections offered, delivery mode for the course section,

total number of students enrolled and total number of high school students enrolled, cost to the student of required textbooks and course-related fees)

- **Expenditures** (e.g., total amount paid to teaching staff for providing instruction for courses for dual credit, total tuition paid by LEAs to CCDs for courses for dual credit, total fees paid by LEAs to CCDs for courses for dual credit)
- **Revenues** (e.g., all tuition payments received directly from dual credit students for course participation, total amount of all transportation fee payments received directly from dual credit students for transportation to/from courses for dual credit, total amount of federal funds used to support the dual credit program, total amount of state funds used to support the dual credit program, total amount of local and other funds used to support the dual credit program).

Administrators at IHEs, LEAs, and high schools were given detailed instructions for providing the requested data cross-referenced to the Excel workbooks in which respondents were to enter the requested information.

Of the 15 higher education institutions that were asked to provide course and financial data, 14 (11 community colleges and 3 universities) provided usable data (defined as data that were complete and reasonable), for a response rate of 93%. Of the 48 LEAs that were asked provide financial data, 22 (46%) provided usable data; and of the 48 high schools that were asked to provide course and financial data, 24 (50%) provided usable data.

Copies of the financial data requests sent to LEAs are included in the appendices. See Appendix D for a copy of the supplemental higher education course and financial data request, Appendix E for a copy of the supplemental LEA financial data request, and Appendix F for a copy of the supplemental high school course and financial data request.

## Extant Data

TEA provided the research team with PEIMS data on all students enrolled in courses for dual credit during the 2008–09, and 2009–10 academic years as well as data on the demographic characteristics of these students and their performance on the 2010 TAKS. AEIS data on the characteristics of the high schools attended by these students also were provided to the research team by TEA. Because these data are available for all public high schools in the state, statewide student dual credit enrollment patterns can be examined by both student and school characteristics using these data. The PEIMS data also identify the specific high school course for which a student received credit after completing a college course (the college course is not identified), which makes it possible to examine the subject areas in which students took courses for dual credit.

Extant data on dual credit enrollment for the 2007–08, 2008–09, and 2009–10 academic years also were obtained from THECB. Although THECB does not collect data on the specific courses that individual students take, it does collect data on the number of semester credit hours attempted by a student enrolled in college courses for dual credit and thus serves as an additional source of data on dual credit

enrollment. THECB data on average professor salary<sup>12</sup> and on cost per contact hour<sup>13</sup> per program area also were used in analyses. In addition, THECB provided the research team with copies of the articulation agreements for each of 12 CCDs included in the study sample as well a list of CCD and LEA and campus partnerships.

Data on student enrollment in courses for dual credit were available from two sources (PEIMS and THECB). These data sources contained different pieces of information on different students and were used for different purposes. Looking at only the overlapping students (i.e., students with records appearing in both data sources) would have resulted in the elimination of nearly half of the data records available. There are several reasons for this difference related to how the data are collected and reported and to variations in the populations reported. Therefore, instead of using only the information on the students who appeared in both data sources, the PEIMS data (from academic years 2007–08, 2008–09, and 2009–10) were used to address the context of dual credit in Texas (e.g., who took courses, what types of courses were available, and who was taking what types of courses). The THECB data (from academic year 2009–10) contained information on student credit hours and student contact hours, which was more suitable for use in the analysis of program cost. The THECB data were used in that set of analyses. Data on transportation costs per mile were also used in analyses of program costs. These data were obtained from eFacts+, an online database containing financial, student, and staff information for every LEA and campus in Texas.

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<sup>12</sup> Average professor salary is the average across the different types of instructors (e.g., assistant professor, associate professor, full-professor of courses for dual credit. Adjunct faculty salary was calculated separately and only applied to courses taught by adjunct faculty.

<sup>13</sup> A contact hour is a measure that represents an hour of scheduled instruction given to students. For lecture-based courses, 16 contact hours is equal to one semester credit hour; for lab courses, 32 contact hours is equal to one semester credit hour.

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## Findings

To examine the state context for dual credit programs and courses, both extant data from TEA and survey data collected from the study sample of IHEs, LEAs, and high schools were descriptively analyzed. Findings based on the extant data are first presented to provide a profile of student enrollment in courses for dual credit based on data from all public schools within the state. Findings from surveys conducted with administrators or staff within the study sample are then presented to provide more in-depth information about characteristics of dual credit programs, course offerings, and student supports. Findings on the cost of dual credit programs are then presented.

### Statewide Dual Credit Enrollment Findings

The findings presented in this section address the first research objective—to investigate the state context of dual credit programs and courses. The following subquestions within this objective are addressed:

1. Who enrolls in courses for dual credit?
2. What school characteristics predict enrollment in courses for dual credit?
3. What types of courses for dual credit are available?
4. What types of courses for dual credit do students take?
5. How does enrollment in courses for dual credit vary by student characteristics?
6. How do students who take courses for dual credit perform in these courses and on the TAKS?

Findings are based on PEIMS data from all public schools within the state that had students who were enrolled in courses for dual credit. Most analyses are based on data from the 2007–08, 2008–09, and 2009–10 academic years so that changes in patterns of dual credit enrollment can be examined.<sup>14</sup> The analysis of school characteristics that predict enrollment in courses for dual credit is based on data from the 2009–10 academic year. Findings are presented below by subquestion.

#### Who Enrolls in Courses for Dual Credit?

Table 2 presents the number of students who were enrolled in courses for dual credit during the 2007–08, 2008–09, and 2009–10 academic years. Most students who enrolled in courses for dual credit were in Grades 11 and 12, with Grade 12 students enrolling at the highest rates. In addition, the number of students in Grades 11 and 12 who were enrolled in courses for dual credit increased consistently over the three years examined, as did overall enrollments in these courses. Between 2007–08 and 2009–10, the number of Grade 11 students who were enrolled in courses for dual credit increased by 42%, and the number of Grade 12 students who were enrolled in courses for dual credit increased by 27%. In

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<sup>14</sup> For the analyses presented in this section, the academic year is defined as the period from fall to spring for a given year. No data are available from TEA on summer enrollment in dual credit courses.

2009–10, these enrollments represented about 17% of Grade 12 students and 11% of Grade 11 students within the state as a whole.<sup>15</sup>

**Table 2. Number of Students Enrolled in Courses for Dual Credit by Grade and Year**

Grade	2007–08	2008–09	2009–10	Average
Grade 9	3,373	4,876	4,578	4,276
Grade 10	5,548	6,523	6,140	6,070
Grade 11	24,611	29,115	35,044	29,590
Grade 12	38,269	43,699	48,470	28,913
Other	2	3	0	2
Total	71,803	84,216	94,232	83,417

Source: Public Education Information Management System (Texas Education Agency, 2011).

Note. Across the three years, a total of 5 students in Grades 7 and 8 were enrolled in courses for dual credit.

In addition to examining overall enrollment in courses for dual credit, enrollment was broken down by the following student characteristics: gender, race/ethnicity, economic status, limited English proficient (LEP) status, special education status, gifted and talented status, and vocational education status. Findings for each of these subgroups are presented below.

*Gender.* Table 3 presents a breakdown of student enrollment in courses for dual credit by gender and year. A greater percentage of female students than male students enrolled in courses for dual credit. Percentages remained stable across the three years examined. On average, 56% of dual credit students were female, and 44% were male. The percentage of females enrolled in courses for dual credit was higher than the percentage of all female high school students within the state, 49%, in 2009–10.

**Table 3. Percentage of Students Enrolled in Courses for Dual Credit by Gender and Year**

Gender	2007–08	2008–09	2009–10	Average
Female	56.7%	56.3%	56.3%	56.4%
Male	43.3%	43.7%	43.7%	43.6%
Total students	71,803	84,216	94,232	83,417

Source: Public Education Information Management System (Texas Education Agency, 2011)

Note. Column percentages may not sum to 100 due to rounding.

*Race/Ethnicity.* Table 4 presents a breakdown of student enrollment in courses for dual credit by race/ethnicity and year. The majority of students enrolled in courses for dual credit were either white or Hispanic. On average, 46% of students enrolled in courses for dual credit were white, 40% were Hispanic, and 10% were African American. Less than 5% were Asian/Pacific Islander. The percentages for students from each of these groups remained fairly stable across the three years examined. In 2009–10, 35% of all high school students in Texas were white, 46% were Hispanic, 14% were African American, and 5% were Asian/Pacific Islander. Less than 1% of students were categorized as “other.” White

<sup>15</sup> Data on the number of high school students in the state as a whole and by selected demographic characteristics are from the 2009–10 PEIMS.

students thus were overrepresented in courses for dual credit in 2009–10, and other racial/ethnic groups generally were underrepresented; this was particularly the case for African-American students.

**Table 4. Percentage of Students Enrolled in Courses for Dual Credit by Race/Ethnicity and Year**

Race/Ethnicity	2007–08	2008–09	2009–10	Average
Asian/Pacific Islander	4.6%	4.2%	3.5%	4.1%
African American	9.8%	10.5%	8.4%	9.6%
Hispanic	37.4%	39.7%	41.6%	39.6%
White	47.8%	45.3%	44.8%	46.0%
Other	0.3%	0.3%	1.8%	0.8%
Total students	71,803	84,216	94,232	83,417

Source: Public Education Information Management System (Texas Education Agency, 2011)

Note. Column percentages may not sum to 100 due to rounding.

*Economic Status.* Table 5 presents a breakdown of student enrollment in courses for dual credit by student economic status and year. On average, 37% of students who were enrolled in courses for dual credit were economically disadvantaged (eligible for free or reduced-price lunch or other economic disadvantage). There was a slight increase in the number of economically disadvantaged students across the three years examined. In 2009–10, approximately 50% of all high school students were economically disadvantaged; economically disadvantaged students thus were underrepresented in enrollment in courses for dual credit.

**Table 5. Percentage of Students Enrolled in Courses for Dual Credit by Economic Status and Year**

Economic Status	2007–08	2008–09	2009–10	Average
Economically disadvantaged	34.0%	38.0%	37.9%	36.6%
Not economically disadvantaged	66.0%	62.0%	62.1%	63.4%
Total students	71,803	84,216	94,232	83,417

Source: Public Education Information Management System (Texas Education Agency, 2011)

Note. Column percentages may not sum to 100 due to rounding.

*LEP Status.* Table 6 presents a breakdown of student enrollment in courses for dual credit by student LEP status and year. On average, less than 2% of students who were enrolled in courses for dual credit were categorized as LEP. When students who exited LEP programs are considered, this percentage increases slightly. In 2009–10, 9% of all high school students in Texas were LEP students or students who had exited LEP programs but were monitored. Relative to their representation within the high school population as a whole, LEP students were underrepresented in enrollment in courses for dual credit.<sup>16</sup>

<sup>16</sup> Students must meet certain requirements to be eligible to take courses for dual credit, including achieving the minimum passing standards under the provisions of state dual credit and TSI rules. TSI is a state-legislated program designed to improve student success in college. One component of the program is assessment to diagnose students' basic skills in reading, mathematics, and writing. LEP students are unlikely to pass the tests to qualify for academic courses for dual credit because of their English language skills.

**Table 6. Percentage of Students Enrolled in Courses for Dual Credit by Limited English Proficiency Status and Year**

LEP Status	2007–08	2008–09	2009–10	Average
LEP	1.6%	1.6%	1.1%	1.4%
Exited LEP but monitored	—	1.3%	1.3%	1.3%
Not LEP	98.4%	97.1%	97.6%	97.7%
Total students	71,803	84,216	94,232	83,417

Source: Public Education Information Management System (Texas Education Agency, 2011).

Notes. Data for students who exited LEP programs but were monitored were not reported in 2007–08. Column percentages may not sum to 100 due to rounding.

*Special Education Status.* Table 7 presents a breakdown of student enrollment in courses for dual credit by special education status and year. On average, 2% of students who were enrolled in courses for dual credit were classified as receiving special education services across all three years examined. In 2009–10, approximately 11% of all high school students in Texas were special education students. These students thus were underrepresented in enrollment in courses for dual credit.

**Table 7. Percentage of Students Enrolled in Courses for Dual Credit by Special Education Status and Year**

Special Education Status	2007–08	2008–09	2009–10	Average
Special education	2.3%	2.2%	2.0%	2.2%
Non-special education	97.7%	97.8%	98.0%	97.8%
Total students	71,803	84,216	94,232	83,417

Source: Public Education Information Management System (Texas Education Agency, 2011).

Note. Column percentages may not sum to 100 due to rounding.

*Gifted and Talented Status.* Table 8 presents a breakdown of student enrollment in courses for dual credit by gifted and talented status and year. Across the three years examined, approximately 22% of students who were enrolled in courses for dual credit participated in a gifted and talented program. In 2009–10, approximately 10% of all high school students within the state participated in a gifted and talented program. Gifted and talented students were thus overrepresented in enrollment in courses for dual credit.

**Table 8. Percentage of Students Enrolled in Courses for Dual Credit by Gifted and Talented Status and Year**

Gifted and Talented	2007–08	2008–09	2009–10	Average
Gifted and talented	22.8%	21.7%	21.8%	22.1%
Not gifted and talented	77.2%	78.3%	78.2%	77.9%
Total students	71,803	84,216	94,232	83,417

Source: Public Education Information Management System (Texas Education Agency, 2011).

Note. Column percentages may not sum to 100 due to rounding.

*Vocational Education Status.* Table 9 presents a breakdown of student enrollment in courses for dual credit by vocational education status and year. On average, 75% of students who were enrolled in courses for dual credit participated in some type of vocational course or program. In 2009–10, 77% of all high school students in Texas enrolled in at least one vocational education course. Relative to their representation within the high school population as a whole, students who participated in vocational education programs or courses were slightly underrepresented in enrollment in courses for dual credit.

**Table 9. Percentage of Students Enrolled in Courses for Dual Credit by Vocational Education Status and Year**

Vocational Education Status	2007–08	2008–09	2009–10	Average
Career/Tech Coherent Sequence Grades 9–12	23.6%	23.4%	24.2%	23.7%
Career/Tech Elective Grades 6–12	26.8%	27.5%	25.3%	26.5%
Tech Prep Program	23.9%	24.1%	25.5%	24.5%
No Participation	25.7%	25.1%	25.0%	25.3%
Total Students	71,803	84,216	94,232	83,417

*Source:* Public Education Information Management System (Texas Education Agency, 2011)

*Notes.* Column percentages may not sum to 100 due to rounding. “Career/Tech Coherent Sequence Grades 9–12” refers to recommended sequences of career or technical courses that are offered to high school students, and “Career/Tech Elective Grades 6–12” refers to elective courses available to students in these grades that are not part of a defined course sequence. “Tech Prep Program” refers to a college-preparatory program that provides students with academic as well as applied technical skills. The high school program prepares students to continue in a college program that leads to a minimum of a two-year postsecondary degree (or apprenticeship license).

### What School Characteristics Predict Enrollment in Courses for Dual Credit?

Part of the analysis of the context of courses for dual credit examined what types of school characteristics were predictive of higher student enrollment in courses for dual credit. To identify these predictors, it was necessary to examine the relationship between individual school variables while simultaneously controlling for other school variables that also may have predictive relationships with dual credit enrollment. A Poisson regression model employing variable exposure (see Appendix G for a discussion of the model’s technical details) was used to examine whether student enrollment rate in dual credit courses was predicted by the following school characteristics: (1) percentage of students proficient on TAKS-Reading,<sup>17</sup> (2) percentage of students proficient on TAKS-Math, (3) percentage of African-American students, (4) percentage of Hispanic students, (5) percentage of LEP students, (6) percentage of economically disadvantaged students, (7) percentage of gifted and talented students, (8) percentage of students taking AP/IB exams, (9) student-to-teacher ratios, and (10) rural location of the school.

Results of the analysis indicated that many of these school characteristics are statistically significant predictors ( $p < 0.05$ ) of higher enrollment in courses for dual credit, even after controlling for the size of the school. Results of the analysis show that schools with greater percentages of students who are

<sup>17</sup> Throughout the report in cases where the term *TAKS-Reading* is used, the associated analyses include TAKS data for students at the secondary level and therefore include data from the Grade 9 TAKS-Reading assessment and the Grade 10 and Exit-level TAKS-English Language Arts assessments.

proficient on TAKS-Reading, who are economically disadvantaged, and who are gifted and talented are more likely to have a *higher* enrollment rate in courses for dual credit. Schools with higher percentages of students who are African American, who are LEP, and who are taking AP/IB exams are more likely to have a *lower* enrollment rate in courses for dual credit. Schools located in rural areas also are more likely to have a lower enrollment rate in courses for dual credit. These characteristics are significant predictors of enrollment in courses for dual credit, after controlling for the other characteristics included in the analysis.

## Summary

Overall, the findings indicate that enrollment in courses for dual credit rose from 71,803 in 2007–08 to 94,232 in 2009–10, an increase of 31%. The majority of students who enrolled in courses for dual credit during this three-year period were in Grades 11 and 12, with the highest rates of participation by students in Grade 12. In 2009–10, approximately 17% of high school seniors and 11% of high school juniors in the state enrolled in a course for dual credit. Students in Grades 9 and 10 also enrolled in courses for dual credit but at much lower rates. Although students are usually required to be in Grades 11 or 12 to be eligible to enroll in courses for dual credit, this requirement may be waived for students with outstanding academic performance and capability as evidenced by grade point average, PSAT/NMSQT scores, PLAN, or other assessment indicators, as specified in TAC §4.85(b).

An examination of student enrollment in courses for dual credit by student characteristics such as gender, race/ethnicity, and economic status revealed several differences in participation rates in these courses. (Percentages presented reflect average participation in courses for dual enrollment over the three-year period examined.)

- A greater percentage of female students (56%) than male students (44%) enrolled in courses for dual credit.
- The vast majority of students who were enrolled in courses for dual credit from 2007–08 through 2009–10 were either white (46%) or Hispanic (40%). In 2009–10, white students were overrepresented relative to their representation within the high school population as a whole (35%), and other groups tended to be underrepresented, particularly African-American students.
- Although 50% of all Texas high school students were economically disadvantaged in 2009–10, only 37% of students who were enrolled in courses for dual credit were economically disadvantaged.
- Only 2% of students who were enrolled in courses for dual credit were special education students, although these students represented 11% of Texas high schools students in 2009–10.
- Gifted and talented students were overrepresented in enrollments in courses for dual credit. Approximately 10% of all high school students were identified as gifted and talented in 2009–10, but 22% of students who were enrolled in courses for dual credit were gifted and talented.
- Approximately 75% of students who were enrolled in courses for dual credit took vocational education courses, which is roughly equivalent to the percentage of all high schools students who took at least one career or technical course in 2009–10 (77%).

In addition to examining characteristics of students who were enrolled in courses for dual credit, school characteristics that were predictive of higher dual credit enrollment also were examined. To identify these predictors, it was necessary to examine the relationship between individual school variables while simultaneously controlling for other school variables that also may have predictive relationships with dual credit enrollment. Regression analysis was therefore used to examine whether student enrollment rates in courses for dual credit were significantly predicted by various school characteristics, including percentage of students proficient on TAKS-Reading, percentage of students proficient on TAKS-Math, teacher-student ratios, rural location of the school, and percentage of students in the following categories: African-American students, Hispanic students, LEP students, economically disadvantaged students, gifted and talented students, and students taking AP/IB exams. Findings are summarized below.

- Schools with greater percentages of students who are proficient on TAKS-Reading, who are economically disadvantaged, and who are gifted and talented are more likely to have a *higher* enrollment rate in courses for dual credit, even after controlling for school size.
- Schools with higher percentages of students who are African American, who are LEP, and who are taking AP/IB exams are more likely to have a *lower* enrollment rate in courses for dual credit. Schools located in rural areas also are also more likely to have a lower enrollment rate in courses for dual credit.

### **What Types of Courses for Dual Credit Are Available?**

As previously noted, the PEIMS data identify the specific high school course for which a student received credit after completing a college course. Although the college course is not identified, these data make it possible to determine what types of courses for dual credit are available to students for dual credit. An analysis of these data from 2007–08, 2008–09, and 2009–10 reveals that a variety of courses for dual credit are available to students in both academic and career or technical areas. In the core academic areas, students most frequently were offered English language arts courses in general English as well as reading and journalism; math courses in general math as well as algebra and precalculus or calculus; science courses in areas such as physics, chemistry, animal/aquatic/equine science, and the environment; and social studies courses in areas such as history/government and economics. In elective areas, students most frequently were offered computer science courses, many of which overlapped with technical courses in areas such as technical or information systems; fine arts in music, art, and animation; and foreign language courses in French, Spanish, German, Japanese, and American Sign Language. Finally, students were offered courses for many career or technical paths such as business/entrepreneurial/ management, culinary arts/food production, automotive technology and repair, computer-assisted drafting/engineering systems, hospitality, and advertising.

### **What Types of Courses for Dual Credit Do Students Take?**

Students enrolled in different types of courses at different rates (either because of personal preference or course availability at their school). Table 10 shows the total number of courses for dual credit that students enrolled in during the 2007–08, 2008–09, and 2009–10 academic years as well as the percentage of courses taken in specific subject areas. Approximately 30% of the courses for dual credit

taken by high school students were in social studies/history, and approximately 25% were in English language arts. In addition, 11% of the courses taken were in career or technical education, and approximately 10% were in computer science. Finally, approximately 6% of the courses fell into the category of “other.” The courses in the “other” category may be loosely classified in the following content areas: health-related (43%),<sup>18</sup> physical education (21%), business-related (7%), and miscellaneous (29%), with miscellaneous including about 70 courses in difficult-to-classify areas (generally with small enrollments), such as criminal justice, robotics, photojournalism, and advanced college preparation skills.

**Table 10. Courses for Dual Credit Taken by Students by Course Type and Year**

Course Type	2007–08	2008–09	2009–10	Average
Social studies/history	30.1%	30.5%	31.5%	30.7%
English language arts	25.2%	25.2%	28.7%	26.4%
Career or technical	10.5%	11.0%	10.7%	10.7%
Computer science	10.3%	10.6%	7.4%	9.4%
Mathematics	8.6%	8.4%	8.4%	8.5%
Science	4.0%	3.4%	4.2%	3.9%
Foreign language	3.9%	3.8%	3.3%	3.7%
Fine arts	0.9%	1.3%	1.5%	1.2%
Other	6.6%	5.8%	4.4%	5.6%
Total courses taken	238,290	275,196	249,316	254,267

Source: Public Education Information Management System (Texas Education Agency, 2011)

Note. Column percentages may not sum to 100 due to rounding.

### How Does Enrollment in Courses for Dual Credit Vary by Student Characteristics?

Student dual credit enrollment data also were examined by several student characteristics, including gender, race/ethnicity, economic status, LEP status, gifted and talented status, and career or technical education status. Findings for each of these subgroups are presented below.

*Gender.* Table 11 presents a breakdown of dual credit course enrollment by course type, gender, and year. With regard to the distribution of courses by gender, male students took a greater concentration of coursework in career or technical education than female students. In 2009–10, for example, 13% of all courses taken by male students were in career or technical education compared with 9% of courses taken by female students. Male students also had a slightly greater concentration of coursework in mathematics than female students. In 2009–10, for example, 9% percent of courses taken by male students were in mathematics compared with 8% of those taken by female students. In contrast, female students had a slightly greater concentration of coursework in English language arts than male students. In 2009–10, 30% of all courses taken by female students were in English language arts compared with 27% of courses taken by male students. These patterns are consistent across the three years examined.

<sup>18</sup> Health-related courses include health education (9% of the “other” enrollments) and health science technician courses (34% of the “other” enrollments).

**Table 11. Percentage of Courses for Dual Credit Taken by Course Type, Gender, and Year**

Course Type	2007–08	2007–08	2008–09	2008–09	2009–10	2009–10
	Female	Male	Female	Male	Female	Male
Social studies/history	30.5%	29.7%	31.2%	29.6%	31.8%	31.2%
English language arts	26.8%	23.1%	26.8%	23.1%	30.4%	26.5%
Career or technical	8.4%	13.3%	9.0%	13.7%	8.6%	13.4%
Computer science	9.8%	10.9%	10.1%	11.3%	7.2%	7.7%
Mathematics	8.0%	9.3%	7.9%	9.0%	7.8%	9.1%
Science	4.2%	3.7%	3.4%	3.4%	4.3%	4.0%
Foreign language	4.0%	3.7%	4.0%	3.7%	3.5%	2.9%
Fine arts	0.8%	1.0%	1.2%	1.4%	1.5%	1.4%
Other	7.5%	5.3%	6.5%	4.9%	4.9%	3.6%
Total courses taken	137,141	100,703	156,066	118,538	141,431	107,432

Source: Public Education Information Management System (Texas Education Agency, 2011)

Note. Column percentages may not sum to 100 due to rounding.

*Race/Ethnicity.* Table 12 presents a breakdown of enrollment in courses for dual credit by course type and race/ethnicity for the 2009–10 academic year. (Similar tables summarizing findings from 2007–08 and 2008–09 are presented in Appendix H.) Compared with other groups, African-American and Hispanic students took a lower concentration of coursework in core academic subject areas such as social studies/history and English language arts. For example, 26% of the courses taken by African-American students and 25% of those taken by Hispanic students were in social studies/history compared with 38% of courses taken by white students and 33% of those taken by Asian students. In contrast, African-American and Hispanic students took a greater concentration of coursework in career or technical education and computer science. For example, 21% of the courses taken by African-American students and 15% of those taken by Hispanic students were in career or technical education compared with 6% of the courses taken by white students and 7% of those taken by Asian students. Similarly, 14% of courses taken by African-American students and 12% of courses taken by Hispanic students were in computer science compared with 3% of courses taken by white students and 5% of courses taken by Asian students.

**Table 12. Percentage of Courses for Dual Credit Taken by Course Type and Race/Ethnicity, 2009–10**

Course Type	Asian/Pacific Islander	African American	Hispanic	White	Other
Social studies/history	33.2%	25.8%	24.9%	38.1%	35.7%
English language arts	28.6%	23.4%	24.0%	33.8%	30.0%
Career or technical	7.4%	20.5%	14.9%	5.6%	7.5%
Computer science	5.1%	13.6%	11.7%	2.9%	4.2%
Mathematics	9.8%	4.2%	7.7%	9.5%	10.6%
Science	5.4%	3.0%	3.8%	4.7%	4.5%
Foreign language	3.0%	1.5%	4.8%	2.3%	2.5%
Fine arts	1.9%	2.0%	2.1%	0.8%	1.7%
Other	5.5%	6.1%	6.2%	2.4%	3.4%
Total courses taken	9,670	19,547	100,992	114,230	4,424

Source: Public Education Information Management System (Texas Education Agency, 2011)

Note. Column percentages may not sum to 100 due to rounding.

*Economic Status.* Table 13 presents a breakdown of student enrollment in courses for dual credit by course type, student economic status, and year. Compared with economically disadvantaged students, students who were not economically disadvantaged took a greater concentration of coursework in core academic subjects such as social studies/history and English language arts. For example, in 2009–10, 36% of the courses taken by students who were not economically disadvantaged were in social studies/history compared with 25% of the courses taken by economically disadvantaged students. In contrast, economically disadvantaged students took a greater concentration of coursework in career or technical education and computer science than students who were not economically disadvantaged. In 2009–10, for example, 17% of courses taken by economically disadvantaged students were in career or technical education compared with 7% of courses taken by students who were not economically disadvantaged. Similarly, 13% of courses taken by economically disadvantaged students in 2009–10 were in computer science compared with 4% of the courses taken by students who were not economically disadvantaged. Although these patterns are consistent across the three years examined, there was a slight increase in the percentage of academic courses taken by economically disadvantaged students across the three years. For example, the percentage of social studies/history courses taken by economically disadvantaged students increased from 20% in 2007–08 to 25% in 2009–10, and the percentage of English language arts courses taken by economically disadvantaged students increased from 17% in 2007–08 to 22% in 2009–10.

**Table 13. Percentage of Courses for Dual Credit Taken by Course Type, Economic Status, and Year**

Course Type	2007–08	2007–08	2008–09	2008–09	2009–10	2009–10
	Econ Disadv	Not Econ Disadv	Econ Disadv	Not Econ Disadv	Econ Disadv	Not Econ Disadv
Social studies/history	19.9%	35.4%	20.9%	35.9%	24.6%	35.5%
English language arts	16.5%	29.7%	17.8%	29.4%	22.3%	32.4%
Career or technical	16.6%	7.3%	16.8%	7.8%	16.5%	7.3%
Computer science	19.1%	5.7%	19.3%	5.7%	13.3%	4.1%
Mathematics	6.0%	9.9%	6.5%	9.4%	6.6%	9.4%
Science	3.5%	4.2%	3.0%	3.6%	3.7%	4.5%
Foreign language	4.2%	3.7%	4.0%	3.7%	4.1%	2.7%
Fine arts	1.5%	0.6%	2.1%	0.8%	2.3%	1.0%
Other	12.7%	3.5%	9.6%	3.6%	6.6%	3.0%
Total courses taken	80,420	157,424	99,223	175,381	90,620	158,243

Source: Public Education Information Management System (Texas Education Agency, 2011)

Notes. Column percentages may not sum to 100 due to rounding. “Econ Disadv” refers to students who are categorized as economically disadvantaged; “Not Econ Disadv” refers to students who are not categorized as economically disadvantaged.

*LEP Status.* Table 14 presents a breakdown of student enrollment in courses for dual credit by course type and LEP status for the 2009–10 academic year. (Similar tables summarizing findings from the 2007–08 and 2008–09 academic years are presented in Appendix I.) Compared with LEP students and students who had exited LEP programs, non-LEP students took a greater concentration of coursework in core academic subject areas such as social studies/history and English language arts than LEP students. For example, 32% of the courses taken by non-LEP students were in social studies/history compared with 11% of the courses taken by LEP students and 15% of the courses taken by students who had exited LEP programs. Similarly, 29% of the courses taken by non-LEP students were in English language arts compared with 6% of courses taken by LEP students and 13% of courses taken by students who had exited LEP programs. In contrast, LEP students and students who had exited LEP programs took a greater concentration of coursework in career or technical education and computer science than non-LEP students. For example, 32% of courses taken by LEP students and 23% of those taken by students who had exited LEP programs were in career or technical education compared with 10% of courses taken by non-LEP students. Similarly, 25% of the courses taken by LEP students and 24% of those taken by students who had exited LEP programs were in computer science compared with 7% of courses taken by non-LEP students.

**Table 14. Percentage of Courses for Dual Credit Taken by Course Type and Limited English Proficiency Status, 2009–10**

Course Type	LEP	Exited LEP But Monitored	Not LEP
Social studies/history	10.8%	15.4%	31.9%
English language arts	6.1%	12.9%	29.1%
Career or technical	32.0%	23.1%	10.4%
Computer science	24.8%	23.8%	7.1%
Mathematics	4.0%	6.3%	8.4%
Science	0.8%	2.1%	4.3%
Foreign language	7.5%	4.2%	3.2%
Fine arts	5.5%	3.1%	1.4%
Other	8.5%	9.2%	4.3%
Total courses taken	2,014	2,648	244,201

Source: Public Education Information Management System (Texas Education Agency, 2011)

Note. Column percentages may not sum to 100 due to rounding.

*Special Education Status.* Table 15 presents student enrollment in courses for dual credit by course type, special education status, and year. Compared with special education students, students who did not receive special education services took a greater concentration of courses in core academic subject areas such as social studies/history and English language arts. For example, in 2009–10, 32% of the courses taken by non-special education students were in social studies/history compared with 16% of courses taken by special education students. Similarly, in 2009–10, 29% of the courses taken by non-special education students were in English language arts compared with 10% of the courses taken by special education students. In contrast, special education students took much greater concentration of coursework in career or technical education and computer science than non-special education students. For example, in 2009–10, 41% of the courses taken by special education students were in career or technical education compared with 10% of the courses taken by non-special education students. Similarly, 21% of the courses taken by special education students in 2009–10 were in computer science compared with 7% of the courses taken by non-special education students.

There was some variation in course-taking patterns across the three years examined. For example, the percentage of courses taken by special education students in social/studies history decreased slightly from 10% in 2007–08 to 8% in 2008–09 but then increased to 16% in 2009–10. The percentage of courses in career or technical education taken by special education students increased from 35% in 2007–08 to 41% in 2009–10; however the percentage of computer science courses taken by special education students decreased from 28% in 2007–08 to 21% in 2009–10.

**Table 15. Percentage of Courses for Dual Credit Taken by Course Type, Special Education Status, and Year**

Course Type	2007–08 Special Education	2007–08 Not Special Education	2008–09 Special Education	2008–09 Not Special Education	2009–10 Special Education	2009–10 Not Special Education
Social studies/history	10.1%	30.5%	7.8%	30.9%	15.5%	31.8%
English language arts	8.0%	25.5%	6.8%	25.5%	9.6%	29.0%
Career or technical	35.2%	10.0%	35.5%	10.6%	40.8%	10.2%
Computer science	27.8%	10.0%	33.8%	10.2%	20.7%	7.2%
Mathematics	2.2%	8.7%	1.9%	8.5%	2.0%	8.5%
Science	2.4%	4.0%	2.0%	3.4%	1.4%	4.2%
Foreign language	1.2%	3.9%	1.2%	3.9%	2.0%	3.3%
Fine arts	1.7%	0.9%	3.2%	1.2%	2.5%	1.5%
Other	11.5%	6.5%	7.7%	5.7%	5.4%	4.3%
Total courses taken	3,779	234,065	4,333	270,271	3,938	244,925

Source: Public Education Information Management System (Texas Education Agency, 2011)

Note. Column percentages may not sum to 100 due to rounding.

*Gifted and Talented Status.* Table 16 presents a breakdown of student enrollment in courses for dual credit by course type, gifted and talented status, and year. Gifted and talented students took a slightly greater concentration of coursework in core academic subjects such as social studies/history and English language arts than students who did not participate in a gifted and talented program. For example, in 2009–10, 34% of the courses taken by gifted and talented students were in social studies/history compared with 31% of courses taken by students who did not participate in a gifted and talented program. Similarly 30% of the courses taken by gifted and talented students in 2009–10 were in English language arts compared with 28% of courses taken by students who were not in a gifted and talented program. In contrast, students who were not in a gifted and talented program took a greater concentration of coursework in career or technical education and computer science than gifted and talented students. In 2009–10, for example, 12% of the courses taken by students who did not participate in a gifted and talented program were in career or technical education compared with 7% of courses taken by gifted and talented students. Similarly, 8% of courses taken by nonparticipants in the gifted and talented program were in computer science compared with 6% of courses taken by gifted and talented students. Although there were some minor variations across years in the percentage of courses in each subject area taken by students in each groups, the general patterns described above remained consistent across the three years examined.

**Table 16. Percentage of Courses for Dual Credit Taken by Course Type, Gifted and Talented Status, and Year**

Course Type	2007–08 Gifted Talented	2007–08 Not Gifted Talented	2008–09 Gifted Talented	2008–09 Not Gifted Talented	2009–10 Gifted Talented	2009–10 Not Gifted Talented
Social studies/history	35.2%	28.4%	34.0%	29.4%	33.5%	31.0%
English language arts	26.3%	24.9%	26.5%	24.8%	30.2%	28.3%
Career or technical	6.6%	11.8%	7.6%	12.1%	6.8%	11.8%
Computer science	5.7%	11.8%	6.7%	11.9%	5.7%	8.0%
Mathematics	12.5%	7.2%	12.0%	7.2%	11.2%	7.5%
Science	4.3%	3.8%	3.6%	3.3%	4.7%	4.0%
Foreign language	4.6%	3.6%	4.5%	3.6%	3.5%	3.2%
Fine arts	0.8%	0.9%	1.1%	1.3%	1.2%	1.6%
Other	4.1%	7.4%	4.0%	6.4%	3.2%	4.7%
Total courses taken	61,007	176,837	67,596	207,008	57,580	191,283

Source: Public Education Information Management System (Texas Education Agency, 2011)

Note. Column percentages may not sum to 100 due to rounding.

*Vocational Education Status.* Table 17 presents a breakdown of student enrollment in courses for dual credit by course type and vocational education status for the 2009–10 academic year. (Similar tables summarizing findings from the 2007–08 and 2008–09 academic years are presented in Appendix J.) Compared with students who were not involved in some type of vocational education course or sequence, vocational education students took a slightly lower concentration of courses in core academic subjects such as social studies/history and English language arts. For example, 37% of the courses taken by non-vocational education students were in social studies/history compared with percentages ranging from 27% to 32% across the vocational classifications. Similarly, 32% of the courses taken by non-vocational education students were in English language arts compared with percentages ranging from 25% to 29% across the vocational classifications. In contrast, vocational education students took a greater concentration of coursework in career or technical education and computer science. For example, percentages ranging from 10% to 17% of the courses taken for dual credit by vocational education students across the vocational classifications were in career or technical education compared with 4% of courses taken by non-vocational education students. Similarly, percentages ranging from 9% to 10% of the courses taken by vocational education were in computer science compared with 2% of courses taken by non-vocational education students.

**Table 17. Percentage of Courses for Dual Credit Taken  
by Course Type and Vocational Education Status, 2009–10**

Course Type	Career/Tech Coherent Sequences Grades 9–12	Career/Tech Elective Grades 6–12	Tech Prep Program	Does Not Participate
Social studies/history	31.0%	31.6%	26.6%	36.9%
English language arts	29.1%	29.1%	24.6%	32.0%
Career or technical	11.8%	10.1%	17.1%	3.9%
Computer science	10.3%	8.9%	8.9%	2.0%
Mathematics	7.9%	7.6%	8.3%	9.5%
Science	3.5%	4.9%	4.1%	4.2%
Foreign language	2.4%	2.1%	3.3%	5.1%
Fine arts	0.8%	1.5%	1.1%	2.4%
Other	3.1%	4.0%	6.0%	4.1%
Total courses taken	58,101	62,048	63,546	65,168

*Source:* Public Education Information Management System (Texas Education Agency, 2011).

*Notes.* Column percentages may not sum to 100 due to rounding. “Career/Tech Coherent Sequence Grades 9–12” refers to recommended sequences of career or technical courses that are offered to high school students, and “Career/Tech Elective Grades 6–12” refers to elective courses available to students in these grades that are not part of a defined course sequence. “Tech Prep Program” refers to a college-preparatory program that provides students with academic as well as applied technical skills. The high school program prepares students to continue in a college program that leads to a minimum of a two-year postsecondary degree (or apprenticeship license).

### Summary

A wide variety of courses for dual credit are available to students in both academic and career or technical areas ranging from general English and mathematics courses to computer-assisted drafting/engineering, culinary arts and hospitality, and automotive repair. An analysis of courses by subject area revealed that, on average, 31% of the courses taken for dual credit by high school students were in social studies/history, and 26% were in English language arts across the three years examined. In addition, 11% of the courses taken were in career or technical education, and 9% were in computer science. A smaller percentage of courses were taken in subject areas such mathematics (8%), science (4%), foreign languages (4%), and fine arts (1%). Approximately 6% of the courses fell into the “other” category.

The types of courses students enrolled in also varied by demographic characteristics such as gender and race/ethnicity as well as the types of high school courses or programs in which students participated such as vocational education and gifted and talented programs. A summary of key findings is presented below.

- Male students took a greater concentration of coursework in career or technical education and mathematics than female students, and female students took a greater concentration of coursework in English language arts than male students.

- In 2009–10, for example, 13% of courses taken for dual credit by male students were in career or technical education compared with 9% of courses taken by female students. Male students also took a slightly greater percentage of mathematics courses (9%) in 2009–10, compared with female students (8%).
- In contrast, female students took a slightly greater percentage of English language arts courses (30%) than male students (27%).
- African-American and Hispanic students took a greater concentration of coursework in career or technical education and computer science than students in other racial/ethnic groups, and white and Asian students took a greater concentration of coursework in core academic subjects such as social studies/history.
  - In 2009–10, 21% of courses taken by African-American students and 15% of courses taken by Hispanic students were in career or vocational education compared with 6% of courses taken by white students and 7% of those taken by Asian students.
  - In contrast, 38% of courses taken by white students and 33% of courses taken by Asian students in 2009–10 were in social studies/history compared with 26% of courses taken by African-American students and 25% of courses taken by Hispanic students.
- Economically disadvantaged students took a greater concentration of coursework in career or technical education and computer science than students who were not economically disadvantaged, and students who were not economically disadvantaged took a greater concentration of coursework in core academic subjects such as social studies/history.
  - In 2009–10, for example, 17% of courses taken by economically disadvantaged students were in career or technical education compared with 7% of courses taken by students who were not economically disadvantaged.
  - In contrast, 36% of the courses taken by students who were not economically disadvantaged in 2009–10 were in social studies/history compared with 25% of the courses taken by economically disadvantaged students.
- LEP students took a greater concentration of coursework in career or technical education and computer science than non-LEP students, and non-LEP students took a greater concentration of coursework in core academic subjects such as social studies/history. (Less than 2% of students who were enrolled in courses for dual credit were LEP students.)
  - In 2009–10, for example, 32% of courses taken by LEP students and 23% of those taken by students who had exited LEP programs were in career or technical education compared with 10% of courses taken by non-LEP students.
  - In contrast, 32% of the courses taken by non-LEP students in 2009–10 were in social studies/history compared with 11% of the courses taken by LEP students and 15% of the courses taken by students who had exited LEP programs.
- Special education students took a much greater concentration of coursework in career or technical education and computer science than non-special education students, and non-special education students took a greater concentration of coursework in core academic subjects such as social studies/history. (Approximately 2% of students who were enrolled in courses for dual credit were special education students.)

- In 2009–10, for example, 41% of the courses taken by special education students were in career or technical education compared with 10% of the courses taken by non-special education students.
- In contrast, 32% of the courses taken by non-special education students were in social studies/history compared with 16% of courses taken by special education students.
- Gifted and talented students took a slightly greater concentration of coursework in core academic subjects such as social studies/history and English language arts than students who did not participate in a gifted and talented program, and students who did not participate in a gifted and talented program took a greater concentration of coursework in career or technical education and computer science.
  - In 2009–10, 34% of the courses taken by gifted and talented students were in social studies/history compared with 31% of courses taken by students who did not participate in a gifted and talented program.
  - In contrast, 12% of the courses taken by students who did not participate in a gifted and talented program in 2009–10 were in career or technical education compared with 7% of courses taken by gifted and talented students.
- Vocational education students took a greater concentration of coursework in career or technical education and computer science, and non-vocational education students took a greater concentration of coursework in core academic subjects such as social studies/history.
  - In 2009–10, for example, percentages ranging from 10% to 17% of the courses taken for dual credit by vocational education students across the vocational classifications were in career or technical education compared with 4% of courses taken by non-vocational education students.
  - In contrast, 37% of the courses taken by non-vocational education students in 2009–10 were in social studies/history compared with percentages ranging from 27% to 32% across the vocational classifications.

### **How Do Students Who Take Courses for Dual Credit Perform in These Courses and on the TAKS?**

Although data on the outcomes of students who enroll in courses for dual credit are limited, TEA does collect data on the percentage of students who complete these courses and their pass and failure rates. Table 18 presents the percentage of students who passed, failed, or did not complete courses for dual credit in 2009–10 by course type. Almost all students (all but 0.1%) who were enrolled in courses for dual credit in 2009–10 completed the courses, based on available PEIMS data.<sup>19</sup> In addition, 94% or more received passing grades for the affiliated high school course.

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<sup>19</sup> A student who completes a college course for dual credit is noted in the PEIMS system with a dual credit flag, whether the student passes or fails the course. However, if a student who drops a college course for dual credit during the semester is allowed to enroll in a high school-level course in its place, that student’s dual credit participation cannot be accurately tracked using existing TEA and THECB data. As traditional college students drop courses for many reasons (transportation issues, family concerns, rigor, etc.), having data about the number of drops by dual credit high school students may not be conclusive.

**Table 18. Completion and Passing Rates for Courses Taken for Dual Credit by Course Type, 2009–10**

Course Type	Fail	Incomplete	Pass	Total Courses
English language arts	2.7%	0.0%	97.3%	71,508
Math	5.8%	0.0%	94.2%	20,822
Science	5.1%	0.0%	94.9%	10,453
Social science/history	3.8%	0.0%	96.2%	78,598
Computer science	5.1%	0.0%	94.9%	18,517
Fine arts	5.0%	0.0%	95.0%	3,668
Foreign language	4.0%	0.0%	96.0%	8,114
Career or technical	5.1%	0.1%	94.9%	26,621
Other	4.8%	0.0%	95.2%	10,808

Source: Public Education Information Management System (Texas Education Agency, 2011)

Note. Row percentages may not sum to 100 due to rounding.

Student performance on the TAKS assessment provides another indicator of the academic performance of students who were enrolled in courses for dual credit. Table 19 presents the percentage of students enrolled in courses for dual credit in 2009–10 who met basic proficiency standards on the 2010 TAKS assessment by course type and TAKS subject area. Most students who were enrolled in courses for dual credit in 2009–10 met TAKS proficiency standards in all subject areas. For students who were enrolled in computer science and career or technical education courses, the percentage who met basic proficiency standards in mathematics (86%) and science (88% for students who were enrolled in career or technical education and 90% for students who were enrolled in computer science) was slightly lower than for students who were enrolled in other courses.

**Table 19. Percentage of Dual Credit Students Who Met Basic Proficiency Standards on the 2010 TAKS Assessment by Course Types and TAKS Subject Area**

Course Type	Reading	Mathematics	Science	Social Studies
English language arts	99.0%	98.6%	99.1%	99.5%
Mathematics	99.2%	99.2%	99.1%	99.2%
Science	98.5%	98.1%	98.9%	99.5%
Social studies/history	98.9%	98.5%	98.9%	99.3%
Computer science	94.1%	86.0%	90.1%	96.9%
Fine arts	96.6%	93.1%	95.2%	99.5%
Foreign language	98.0%	95.1%	96.3%	98.8%
Career or technical	93.0%	86.3%	87.9%	95.8%
Other	97.3%	93.5%	94.3%	98.2%
Average	97.6%	95.2%	96.6%	98.7%

Sources: Public Education Information Management System and 2010 TAKS data (Texas Education Agency, 2011)

Table 20 presents the percentage of students enrolled in courses for dual credit in 2009–10 who were commended on the 2010 TAKS assessment by course type and TAKS subject area. The percentage

commended varies by both course type and TAKS subject area. The percentages of students who were commended on the social studies TAKS were relatively high for all courses in which students were enrolled, ranging from 54% for students enrolled in career or technical education courses to 85% for students who were enrolled in mathematics courses. For the other TAKS subject areas, there was considerably more variation by course type. Overall, a smaller percentage of students who were enrolled in computer science courses and career or technical education courses received a commended rating on TAKS subject area assessments compared with students who were enrolled in other courses. For example, among students who were enrolled in career or technical education courses, 29% were commended in reading, 27% were commended in math, 18% were commended in science, and 54% were commended in social studies. In contrast, among students who were enrolled in mathematics courses, 67% were commended in reading/English language arts, 70% were commended in math, 48% were commended in science, and 85% were commended in social studies. To qualify to enroll in career or technical education courses or computer courses, students only have to meet the passing standard on TAKS; to qualify to enroll in academic courses, students must meet the dual credit eligibility standards or the higher education readiness component.

**Table 20. Percentage of Dual Credit Students Who Were Commended on the 2010 TAKS Assessment by Course Types and TAKS Subject Area**

Course Type	Reading	Mathematics	Science	Social Studies
English language arts	58.6%	47.8%	30.9%	75.0%
Mathematics	66.9%	70.2%	48.3%	84.8%
Science	58.9%	53.4%	42.9%	79.0%
Social studies/history	59.7%	51.0%	35.1%	76.3%
Computer science	33.5%	32.1%	21.1%	57.4%
Fine arts	38.1%	36.8%	28.1%	67.3%
Foreign language	44.3%	44.3%	33.0%	69.4%
Career or technical	29.0%	26.8%	18.4%	53.7%
Other	41.0%	39.7%	26.3%	62.0%
Total	51.4%	45.9%	32.2%	71.8%

*Sources:* Public Education Information Management System and 2010 TAKS data (Texas Education Agency, 2011)

Table 21 shows the percentage of dual credit students meeting dual credit eligibility standards or TSI exemption standards in English language arts and mathematics by course type. These standards are defined in relation to student performance on the TAKS. In particular, to meet dual credit eligibility standards or TSI exemption standards in English language arts, students need to score at least 2200 on TAKS-English language arts and receive a score of at least 3 on their written essay. In mathematics, students need to score at least 2200 on TAKS-Math. In general, higher percentages of students taking courses for dual credit met eligibility standards in mathematics. In addition, nearly all students (97%) taking mathematics courses for dual credit met eligibility standards in mathematics. Overall, the percentage of students meeting eligibility standards was higher for students who were enrolled in core academic courses (English language arts, mathematics, science, and social studies/history) than for

students who were enrolled in career or technical education courses and computer science courses. Among students who were enrolled in career or technical courses, the percentage who met eligibility standards for academic courses was relatively low for both English language arts (60%) and mathematics (66%). Among students who were enrolled in computer science courses, the percentage who met eligibility standards was also relatively low for English language arts (66%) and mathematics (71%).

**Table 21. Percentage of Dual Credit Students Meeting Dual Credit Eligibility or Higher Education Readiness Standards in English Language Arts and Mathematics by Course Type**

Course Type	Percent Meeting ELA <sup>1</sup>	Percent Meeting Math	Total
English language arts	83.2%	89.7%	19,545
Mathematics	86.0%	96.7%	9,003
Science	82.1%	88.7%	3,833
Social studies/History	83.0%	90.5%	42,475
Computer Science	65.6%	71.3%	7,990
Fine arts	74.6%	80.7%	1,917
Foreign Language	77.4%	84.0%	5,020
Career or technical	59.8%	66.2%	12,296
Other	70.9%	78.4%	4,223

*Sources:* Public Education Information Management System and 2010 TAKS data (Texas Education Agency, 2011)

*Notes.* In addition to TAKS, THECB dual credit and TSI rules specify several other assessments that may be used to qualify to take academic dual credit courses. Also, beginning in the 2011–12 academic year, TEA will begin implementation of the State of Texas Assessments of Academic Readiness (STAAR) in place of the current TAKS assessment. This shift will necessitate a reformulation of the eligibility standards for enrolling in courses for dual credit.

<sup>1</sup>ELA = English language arts

## Survey Findings from Sampled IHEs, LEAs, and High Schools

To address research objective 1 and its subquestions, this section investigates the context for programs and courses for dual credit based on surveys delivered to administrators of dual credit programs at three educational levels: higher education administration, LEA administration, and high school administration. The following five subquestions within this objective are addressed:

1. What types of courses for dual credit are available?
2. Who makes decisions about the types of courses offered for dual credit?
3. How is the quality of courses offered for dual credit ensured, and what is the perceived quality of courses offered for dual credit?
4. What is the delivery mode of courses offered for dual credit?
5. What types of institutional policies and requirements exist with regard to dual credit student eligibility and supports (e.g., student advising/counseling, financial support) and dual credit faculty benefits?

## What Types of Courses for Dual Credit Are Available?

All respondents were asked to report on courses offered to students for dual credit during the 2009–10 academic year, including on campus, off campus, and distance learning courses. As shown in Table 22, respondents on each of the surveys reported most frequently offering courses for dual credit in English (100% IHEs, 92% LEAs, 93% high schools [HSs]) and the social sciences/history (100% IHEs, 94% LEAs, 94% HSs). A greater percentage of respondents to the IHE survey reported offering classes in mathematics, fine arts, science, career or technology, computer science, and foreign languages than respondents to the LEA and high school surveys.

**Table 22. Courses Offered for Dual Credit in the 2009–10 Academic Year**

In which of the following subject areas were courses for dual credit offered to high school students for the 2009–10 academic year?	IHE (N = 15)	LEA (N = 36)	High School (N = 34)
Social studies/history	100.0%	94.4%	94.1%
English language arts	100.0%	91.7%	93.0%
Mathematics	100.0%	69.4%	73.5%
Fine arts	93.3%	33.3%	32.4%
Science	80.0%	52.8%	50.0%
Career or technical	73.3%	55.6%	61.8%
Computer science	73.3%	33.3%	35.3%
Foreign language	66.7%	22.2%	26.5%
Other	-	-	32.4%

*Sources:* Higher Education Administrator Telephone Survey, District (LEA) Administrator Telephone Survey, and High School Administrator Telephone Survey; Research Study of Texas Dual Credit Programs and Courses (Texas Education Agency, 2011)

*Note.* Respondents were instructed to select all that apply; therefore, percentages exceed 100%.

More than 50% of all respondents reported offering courses to students for dual credit in both academic and career or technical areas. No respondents on any of the surveys reported that only career or technical education courses were offered.

## Who Makes Decisions About the Types of Courses Offered for Dual Credit?

According to respondents to the IHE survey, decisions about the types of courses offered for dual credit are made mainly by full- and/or part-time faculty (80%). A small percentage of IHEs (7%) cited high school LEA personnel as playing a key role in deciding dual credit offerings. Some IHEs also cited other decision makers in deciding which courses to offer, including dual credit administrators, outreach coordinators, department chairs, program directors, and disciplinary committees. High school respondents reported that the higher education partner (71%), the school or LEA (71%), and high school faculty (41%) were involved in making decisions about the types of courses offered for dual credit.

## How Is the Quality of Courses Offered for Dual Credit Ensured, and What Is the Perceived Quality of Courses Offered for Dual Credit?

IHEs reported working with multiple partners to ensure that courses for dual credit are aligned with the state standards, the Texas Essential Knowledge and Skills (TEKS). As shown in Table 23, the vast majority of IHEs (73%) worked with LEAs to align courses with the TEKS. IHEs also mentioned that they ensure that courses are aligned with the TEKS by working with syllabi from other college courses. Similarly, 88% of high school administrators reported that in order to ensure that courses available for dual credit provide advanced academic instruction beyond, or in greater depth than, the TEKS, they monitor the college course syllabi and rely on or work with their higher education partner.

**Table 23. IHE Dual Credit Course TEKS Alignment Strategies**

<b>Which of the following does your school do to ensure that the dual credit courses it offers meet or exceed the Texas Essential Knowledge and Skills (TEKS)? (N = 15)</b>	<b>Percentage</b>
Works with school district (LEA) to align courses with TEKS	73.3%
IHE aligns curriculum with TEKS	26.7%
Works with TEA to align courses with TEKS	13.3%
Other	60.0%

*Source:* Higher Education Administrator Telephone Survey, Research Study of Texas Dual Credit Programs and Courses (Texas Education Agency, 2011)

*Note.* Respondents were instructed to select all that apply; therefore, percentages exceed 100%.

Each survey asked respondents how they ensure the quality and rigor of courses offered to students for dual credit. The data suggest that the efforts made by IHEs to ensure quality and rigor are consistent and universally applied across all courses. High school respondents most frequently (27%) stated that the quality and rigor of courses for dual credit are ensured by monitoring teacher quality, the curriculum, and pedagogy in the classroom. LEA respondents most frequently (39%) reported that the quality and rigor of courses for dual credit are ensured by reviewing the IHE's curriculum and syllabi and monitoring the courses for alignment with the TEKS.

Overall, most IHEs (73%) reported that courses for dual credit delivered by their college/university are consistently rigorous across courses, and 87% of IHE respondents reported that courses for dual credit taught at the college campus are equally as rigorous as courses for dual credit taught at the high school campus. Similarly, most high school administrators reported that courses for dual credit are consistently rigorous across courses (44%), or that there is only a small degree of difference in the level of rigor among courses (50%). According to all IHEs, high school students must meet the same attendance requirements as college students to receive credit.

High school administrators also reported on three common programs or practices used to prepare students for college: courses for dual credit, AP courses, and IB programs. As shown in Table 24, the vast majority of respondents stated that each of these programs or practices is effective or very effective in preparing students for college.

**Table 24. Effectiveness of Advanced Course Offerings in Aiding College Enrollment**

How effective are these programs/practices in helping students enroll in college?	<i>N</i>	Very Ineffective	Ineffective	Effective	Very Effective	Missing
Courses for dual credit	34	11.8%	0.0%	20.6%	67.6%	-
AP classes	27	7.4%	11.1%	33.3%	44.4%	3.7%
IB programs	4	-	-	25.0%	50.0%	25.0%

*Source:* High School Administrator Telephone Survey, Research Study of Texas Dual Credit Programs and Courses (Texas Education Agency, 2011)

*Note.* This question was asked only of those respondents who reported that their high school offered these courses. In addition, among those respondents who reported that their high school offered AP or IB courses, some did not answer this question (those coded as “Missing”).

In response to a question about the extent to which AP courses, IB courses, and courses for dual credit were offered, the greatest percentage of respondents (74%) from the high school survey said their school widely offered courses for dual credit (or had contractual arrangements with an IHE to offer such courses), followed by about half of respondents (53%) reporting widely offering AP courses. Only 12% of high school administrators reported offering any IB courses at their school.

When asked to compare courses for dual credit to other types of advanced courses (See Tables 25 and 26), 45% of respondents to the high school survey who provided ratings said AP courses were more rigorous than dual credit courses (9% of respondents did not answer this questions or said “I don’t know”), 38% of respondents who provided ratings said IB courses were more rigorous (53% of respondents did not answer this question or said “I don’t know”). Another 42% of respondents stated that AP courses were equally as rigorous as courses for dual credit, and 50% of respondents stated that IB courses were. Most if not all respondents reported giving additional weight in the calculation of high school grade point averages for academic courses for dual credit (79%), AP courses (96%) when offered, and IB courses (100%) when offered.

**Table 25. Comparative Rigor of AP and Courses for Dual Credit**

In your opinion, AP courses typically are: ( <i>N</i> = 31)	Percentage
More rigorous than courses for dual credit	45.2%
Equally as rigorous as courses for dual credit	41.9%
Less rigorous than courses for dual credit	12.9%

*Source:* High School Administrator Telephone Survey, Research Study of Texas Dual Credit Programs and Courses (Texas Education Agency, 2011)

*Note.* 9% of the sample responded ‘I don’t know’ or did not respond. Only respondents who reported on the comparative rigor of AP courses are included in the table.

**Table 26. Comparative Rigor of IB and Courses for Dual Credit**

<b>In your opinion, IB courses typically are: (N = 16)</b>	<b>Percentage</b>
More rigorous than courses for dual credit	37.5%
Equally as rigorous as courses for dual credit	50.0%
Less rigorous than courses for dual credit	12.5%

*Source:* High School Administrator Telephone Survey, Research Study of Texas Dual Credit Programs and Courses (Texas Education Agency, 2011)

*Note.* 53% of the sample responded “I don’t know” or did not respond. Only respondents who reported on the comparative rigor of IB courses are represented in the table.

### **What Is the Delivery Mode of Courses Offered for Dual Credit?**

The location for delivery of courses for dual credit varied widely. As shown in Table 27, the majority of high school administrators reported that students at their school took courses for dual credit at a community college (88%) and/or on the high school campus (77%). Many respondents (47%) also stated that students took dual credit courses via distance learning. Of these respondents, 44% reported that students were enrolled in “synchronous” courses, where students participated in real-time discussion with the instructor and other students during class sessions, and 81% reported that students were enrolled in “asynchronous” courses, where students received instruction on their own schedule and communicated with instructors and classmates through e-mail or discussion boards. For all classes, about half of respondents said all students took courses for dual credit only with other high school students, and the other half of respondents said students took courses with both college and high school students together.

**Table 27. Location of Courses for Dual Credit During the 2009–10 Academic Year**

<b>During the 2009–10 academic year, did students from your campus enroll in courses for dual credit at any of the following: (N = 34)</b>	<b>Yes</b>	<b>No</b>	<b>Missing</b>
At a community college	88.2%	11.8%	-
At your high school	76.5%	23.5%	-
Via distance learning	47.1%	52.9%	-
At another high school	17.6%	82.4%	-
At a four-year college or university	14.7%	76.5%	8.8%

*Source:* High School Administrator Telephone Survey, Research Study of Texas Dual Credit Programs and Courses (Texas Education Agency, 2011)

*Note.* Respondents were instructed to select all that apply; percentages therefore exceed 100%.

With regard to the types of instructors teaching courses for dual credit, the majority of LEA respondents (67%) reported that high school faculty taught courses for dual credit in their LEA. These reports were more frequent from high school respondents, with 88% stating that only high school faculty or both high

school and college faculty taught courses for dual credit that are offered to students in their high school. Nine percent of high school respondents also indicated that only college faculty taught courses for dual credit to their students.

### What Types of Institutional Policies and Requirements Exist With Regard to Dual Credit Student Eligibility and Supports and Dual Credit Faculty Benefits?

On surveys, both high school and IHE administrators were asked about eligibility requirements that students must meet prior to enrollment in courses for dual credit. As shown in Table 28, IHE administrators most commonly reported that students need high school approval (93%) and must meet standard admission requirements for their college or university (93%) prior to enrolling in courses for dual credit. Most high school respondents mentioned these requirements (82% and 82% respectively), and almost all high school respondents stated that students must be in a certain grade level (97%) and have a minimum score on a standardized test such as the TAKS (97%). Fewer than 25% of high school and IHE administrators reported age (20% IHEs; 3% HSs), disciplinary status (20% IHEs; 15% HSs), or a teacher recommendation (13% IHEs; 6% HSs) as requirements.

**Table 28. High Schools' Dual Credit Program Requirements**

Which requirements, if any, are your students required to meet prior to enrolling in courses for dual credit?	IHE Respondents (N = 15)	HS Respondents (N = 34)
High school approval	93.3%	82.4%
Higher education partner approval/meet standard admission requirements	93.3%	82.4%
Minimum standardized test scores	80.0%	97.1%
Prerequisite courses	80.0%	50.0%
Grade level	73.3%	97.1%
Maximum course load	60.0%	NA
Minimum of HS hours/GPA	40.0%	52.9%
Minimum GPA	40.0%	11.8%
Disciplinary status	20.0%	14.7%
Age	20.0%	2.9%
Teacher recommendation	13.3%	5.9%
Interview	NA	8.8%
Other	20.0%	23.5%
No admission requirement	6.7%	2.9%

*Sources:* Higher Education Administrator Telephone Survey, High School Administrator Telephone Survey; Research Study of Texas Dual Credit Programs and Courses (Texas Education Agency, 2011).

*Note.* Respondents were instructed to select all that apply; therefore, percentages exceed 100%.

As reported in response to an open-ended question, a majority of the high school (53%) and IHE (53%) administrators reported that students were allowed to take a maximum of two courses per semester, as

allowed by THECB, with some reporting exceptions for an additional course each semester with approval from school administration.

Approximately half of LEA respondents (54%) reported that they provide additional benefits to high school faculty for teaching courses for dual credit. Most commonly, LEAs provided high school faculty with a stipend (77%) for teaching courses for dual credit.

Approximately 41% of high school respondents stated that tuition is not paid by students who enroll in courses for dual credit. As shown in Table 28, for the students who do pay tuition, it is primarily paid for either by the LEA (44%) or the student’s family (41%). Similarly, the LEA or student’s family is primarily responsible for transportation costs (43% LEAs; 29% student’s family) and textbooks (44% LEAs; 56% student’s family).

**Table 29. Financial Responsibility for Tuition**

<b>Who is primarily responsible for paying tuition for students who are enrolled in dual credit courses? (N = 34)</b>	<b>Percentage</b>
The school district (LEA) is primarily responsible.	44.1%
The student’s family is primarily responsible.	41.2%
A higher education partner is primarily responsible.	8.8%
Another third party is responsible.	2.9%
Missing	2.9%

*Source:* High School Administrator Telephone Survey, Research Study of Texas Dual Credit Programs and Courses (Texas Education Agency, 2011)

All LEAs surveyed reported publicizing the availability of their dual credit programs to all students. Respondents at both the IHEs and high schools reported offering support services to students enrolled in courses for dual credit. All but one of the IHEs (93%) reported providing informational or orientation sessions for high school students interested in taking courses for dual credit. In addition, nearly all high school administrators (94%) reported that students are able to receive counseling specific to dual credit choices and programs, most often provided by a school counselor (92%).

A few IHEs (27%) had a staff member responsible for advising students enrolled in or interested in courses for dual credit at the high school campus. In most cases, regular college academic advisors assumed this responsibility, and reports of specialized training varied. The majority of LEAs (55%) reported that they did not provide dual credit advisors with specialized training on dual credit choices and programs. In contrast, 83% of high school administrators reported that staff members at their school who provided counseling had received specialized training in dual credit choices. Of all IHE respondents, 73% indicated that they provided school staff with specialized training related to the dual credit program, but many of them indicated that the training was no different than the regular training given to academic advisors.

## Summary

A summary of findings from surveys completed by administrators or staff at sampled IHEs, LEAs, and high schools is presented below.

**Types of Courses Available for Dual Credit.** In the 2009–10 academic year, students within sampled CCDs were offered courses for dual credit in core academic, elective, and career or technical education areas. In academic areas, the majority (if not all) respondents reported offering courses in English, social studies/history, and mathematics for dual credit.

- All IHEs (100%), 94% of LEAs, and 94% of high schools offered courses for dual credit in social studies/history.
- All IHEs (100%), 92% of LEAs, and 93% of high schools offered courses in English for dual credit.
- Although 100% of IHEs reported offering mathematics courses for dual credit, only 69% of LEAs and 74% of high schools reported doing so.
- Across the three surveys, fewer respondents reported offering science as a course for dual credit. Only 80% of IHEs, 53% of LEAs, and 50% of high schools reported offering science courses for dual credit.

The majority of IHEs reported offering elective courses for dual credit, but LEAs and high schools reported doing so less frequently.

- Almost all (93%) of IHEs reported offering fine arts courses for dual credit, but only 33% of LEAs and 32% of high schools reported doing so.
- Approximately 73% of IHEs offered computer science courses for dual credit, but only 33% of LEAs and 35% of high schools reported that computer science courses were offered for dual credit.
- Approximately 67% of IHEs offered foreign language courses for dual credit, but only 22% of LEAs and 27% of high schools reported doing so.

Differences in the types of core academic and elective courses offered for dual credit by IHEs, LEAs, and high schools are likely due to student demand and to the availability of qualified teaching staff. As indicated by the statewide findings on enrollment in courses for dual credit, the majority of courses taken for dual credit in 2009–10 were in social/studies (32%) and English language arts (28%), suggesting a relatively high demand for courses in these subject areas. In contrast, only 8% of courses taken for dual credit in 2009–10 were in mathematics, 4% were in science, 7% were in computer science, 3% were in foreign languages, and less than 2% were in fine arts. Because IHEs offer dual credit courses to several LEAs, the variety of courses offered by IHEs is, not surprisingly, greater than for LEAs.

The majority of all respondents reported the availability of career or technical education courses to students. Approximately 73% of IHEs, 56% of LEAs, and 62% of high schools offered courses in career or technical education for dual credit. Across all three surveys, more than 50% of respondents reported that courses were offered both in academic and career or technical areas for dual credit.

**Decisions About the Types of Courses Offered for Dual Credit.** IHE respondents reported that decisions about what types of courses to offer for dual credit are made primarily by full- and/or part-time faculty (80%). High school respondents reported that the higher education partner (71%), the school or LEA (71%), and high school faculty (41%) were involved in making decisions about the types of courses offered for dual credit.

**The Quality of Courses Offered for Dual Credit.** IHEs reported working with multiple partners to ensure that courses for dual credit are aligned with the Texas Essential Knowledge and Skills (TEKS). The vast majority of IHEs (73%) worked with LEAs to align courses with the TEKS. To ensure the quality and rigor of these courses, 27% of high schools respondents said they monitored teacher quality, the curriculum, and pedagogy in the classroom, and 39% of LEA respondents reviewed the IHE's curriculum and syllabi and monitored the courses for alignment with the TEKS.

Respondents also reported that courses for dual credit are consistently rigorous across courses and that courses for dual credit offered on high school campuses are as rigorous as those offered on college campuses. As with other accelerated learning programs such as AP and IB classes, courses for dual credit were reported as effective in helping students enroll in college. Among high school respondents who provided comparative ratings of AP courses and courses for dual credit, 42% reported that AP courses and courses for dual credit were equally rigorous, 45% reported that AP courses were more rigorous than courses for dual credit, and 13% reported that courses for dual credit were more rigorous than AP courses. Among high school respondents who provided comparative ratings of IB courses and courses for dual credit 50% reported that IB courses and courses for dual credit were equally rigorous, 38% reported that IB courses were more rigorous than courses for dual credit, and 13% reported that courses for dual credit were more rigorous than IB courses

**The Delivery Mode of Courses Offered for Dual Credit.** According to high school respondents, courses for dual credit were most commonly provided to students at a community college (88%) and/or at the high school (77%). Just under half of high school respondents (47%) reported that courses for dual credit were offered to students via distance learning. If distance learning was the mode of delivery, most respondents (81%) indicated that the courses were asynchronous (i.e., students received instruction on their own schedule and communicated with instructors and classmates through e-mail or discussion boards).

The majority of both LEA and high school respondents indicated that instruction for courses for dual credit was provided most frequently by high school faculty. Approximately half of high school respondents reported that students took courses for dual credit only with other high school students, and the other half of respondents indicated that high school students took courses for dual credit with both high school and college students.

### **Types of Institutional Policies and Requirements That Exist With Regard to Dual Credit.**

Respondents reported on the following institutional policies and requirements that exist with regard to student eligibility for enrollment in courses offered for dual credit, supports provided to students who

enroll in courses for dual credit (e.g., student advising/counseling, financial support), and benefits provided to faculty who teach courses offered for dual credit:

- *Eligibility requirements.* IHEs and high schools most commonly required students to receive high school approval (93% IHEs; 82% HSs), meet the higher education partner’s standard admission requirements (93% IHEs; 82% HSs), receive a minimum score on a standardized test (80% IHEs; 97% HSs), and be at a specific grade level (73% IHEs; 97% HSs) in order to enroll in courses for dual credit.
- *Course load.* According to high school and IHE respondents (53% and 53% respectively), students could enroll in two courses per semester. With approval from school administration, some students also were allowed to take a third course in a given semester.
- *Tuition.* Approximately 41% of high schools reported that students who enroll in courses for dual credit do not pay tuition. To cover the cost of tuition, 44% of respondents reported that the LEA is primarily responsible for paying tuition, and 41% reported that the student’s family is primarily responsible for paying tuition.
- *Other costs.* Similar to the findings for tuition, high schools reported that the LEA and the student’s family are primarily responsible for transportation costs (43% LEA; 29% student’s family) and textbooks (44% LEA; 56% student’s family).
- *Student advising/counseling.* All LEAs reported publicizing the availability of their dual credit programs to all students. To publicize courses, 93% of IHEs (offered informational or orientation sessions for high school students. High school counselors provided counseling to students specific to courses for dual credit in 92% of responding LEAs. A few IHEs (27%) provided a school-level staff member to advise students enrolled in or interested in courses for dual credit.
- *Training for staff.* Most IHEs (73%) reported providing school staff with specialized training related to the dual credit program, and most high school respondents (83%) reported that high school staff had received such training.

## Findings on How Courses for Dual Credit Are Funded in Texas and the Cost of Delivering Courses for Dual Credit

The evaluation team was charged with conducting a largely exploratory analysis of how the costs associated with the delivery of courses for dual credit are funded and the estimated cost of delivering courses for dual credit to high school students in Texas using various locations and modes of delivery. These courses may be delivered on high school campuses (by high school teachers or college professors) or on college campuses (by adjunct or salaried professors). The findings presented in this section address four primary research questions using two distinctly different analysis approaches:

1. Analysis of various funding/revenue sources (i.e., funding sources for the delivery of courses for dual credit) to estimate the total amount of payments for courses for dual credit provided at the LEA and community colleges in Texas, and to determine which system participants and funders (e.g., state of Texas, community colleges, LEAs, students/families, federal government, local and other funding sources) are bearing the burden of paying for the delivery of these courses. (Subquestion 1)
2. Analyses related to the estimated cost of delivering courses for dual credit to high school students in Texas and how costs differ by a variety of factors, such as location of delivery (e.g.,

high school campus versus college campus, community college campus versus four-year university campus); mode of delivery (e.g., face-to-face versus online delivery); and district/campus characteristics (e.g., size, performance, etc.). (Subquestions 2–4)

To examine the revenue/funding and cost of courses for dual credit, both extant data from THECB and TEA, and supplemental financial data collected directly from the study sample of IHEs, LEAs, and high schools were analyzed. These data were used to reconstruct dual credit expenditures and revenues by funding source and then to estimate the cost of dual credit courses taught on high school and college campuses.

Findings are organized according to the following subquestions within research objective 2:

1. What are the total payments made by various system participants and funders for courses for dual credit, and who bears the financial burden for delivering courses for dual credit to high school students in Texas?
2. What are the instructional costs per student credit hour for hours attempted on high school and community college campuses?
3. What is the variance in the cost for courses for dual credit by type of IHE and various attributes of high schools?
4. What is the cost-effectiveness of courses for dual credit by various modes of delivery?

Four primary data sources were used in the revenue/funding and cost analyses presented in this chapter of the report, including the following:

- Extant data from THECB including student contact hours attempted for all community college courses in the state, average professor salary, and data on cost per contact hour per program area (from THECB’s most recent cost calculation)
- Extant data from AEIS including average teacher salary information for each LEA, student socioeconomic status percentage (LEA level only), student enrollment, campus accountability rating for those LEAs and campuses included in the study sample obtained from THECB
- Transportation cost per mile extracted from eFACTS+ (consolidated from TEA’s LEA Student Transportation Operations Cost and Mileage data)<sup>20</sup>
- Data collected from sampled IHEs, LEAs, and high schools, including costs of delivering courses for dual credit to high school students, expenses related to the dual credit program, and revenues generated as a result of the dual credit program. Course-level data were collected from sampled community colleges, four-year universities, and high schools, including courses offered, student enrollment in courses for dual credit, and associated course fees, among other items.

Usable data, defined as complete and reasonable, were received from 14 IHEs (11 CCDs and three four-year universities), 22 LEAs, and 24 high schools.

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<sup>20</sup> Transportation cost data were used for the various cost per credit hour analyses only (i.e., subquestions 2–4) because few LEAs reported that they pay for transportation to community college campuses for students enrolled in courses for dual credit, and these payments for transportation could not be accurately estimated and extrapolated to the state from the sample data.

It is important to understand that this is an exploratory assessment of how the delivery of courses for dual credit is funded in Texas and the costs associated with delivering dual credit courses to high school students in Texas. These estimates should be viewed with caution because of the relatively small sample size and the assumptions that were required to reconstruct the costs and revenue structure of dual credit programs at the IHE, LEA, and campus levels. In addition, it should be noted that the analyses were conducted in the context of the following overarching assumptions:

1. The amount of state funding allocated to community colleges for the delivery of courses for dual credit assumes that funding used for these courses is proportionate to contact hours for courses for dual credit and a percentage of all community college course contact hours.
2. The proportion of costs for delivering courses for dual credit to the state, community colleges, and students is extrapolated on the basis of expenditure data collected from a relatively small sample of community colleges, four-year institutions, LEAs, and high school campuses. This sample may or may not be fully representative of all of such entities in the state.

The remainder of this section is organized according to the four research subquestions.

### **What Are the Total Payments Made by Various System Participants and Funders for Courses for Dual Credit, and Who Bears the Financial Burden for Delivering Courses for Dual Credit to High School Students in Texas?**

Before addressing the research questions in this chapter of the report, it is important to make the distinction between the cost of delivering courses for dual credit by LEAs and community colleges and the revenue, or funding sources, used to support these courses. The primary costs associated with courses for dual credit include the following:

- Cost of instruction (i.e., instructor salaries or course-based payments to per-course adjunct professors for teaching courses for dual credit)
- Cost of textbooks used by students in courses for dual credit
- Administrative costs associated with running dual credit programs at the LEA and community college levels
- Transportation costs associated with student travel to and from college campuses to attend courses for dual credit

To the extent possible, these costs are explored in the costs analyses that address subquestions 2–4 within research objective 2. These also are costs associated with courses for dual credit that need to be accounted for by state, federal, local, and other funding sources, as well as by direct payments made by students and their families for tuition/fees and course textbooks. Transportation costs to attend courses for dual credit are an additional student expenditure that is not included in the statewide estimates, but we recognize that they are real expenses paid by students and their families.

There are a number of different revenue/funding sources for the delivery of courses for dual credit to high school students in Texas. The following revenue/funding sources are not an exhaustive list but represent the major sources of payments for the delivery of courses for dual credit that could be

estimated as part of this study:

#### State funding

- State appropriations to community colleges for courses for dual credit
- State funding provided to LEAs (e.g., Foundation School Program (FSP), State Compensatory Education funds, High School Allotment funds, funds allocated through state discretionary and formula-funded grants) used by LEAs for courses for dual credit<sup>21</sup>

#### Revenues derived from student/family payments

- Student payments to community colleges for tuition/fees for courses for dual credit
- Student payments for textbooks for courses for dual credit

#### Federal funding

- Federal funds used by LEAs for courses for dual credit
- Federal funds used by community colleges for courses for dual credit

#### Local and other funds

- Local funds used by LEAs for courses for dual credit
- Local funds used by community colleges for courses for dual credit
- Other funds used for courses for dual credit

As the list above suggests, LEAs and community colleges receive funding from various sources to support the cost of delivering courses for dual credit to high school students. Funding sources for LEAs may include state funds (e.g., state funding received by LEAs that is used to support the delivery of courses for dual credit, including FSP funding, High School Allotment funds, State Compensatory Education funds, and other state grants) and other funding from the state and local funds.

Four-year institutions were excluded from the analysis of how dual credit programs in Texas are funded. Because of timing, data collection complexities, and budget constraints, revenue and expenditure data were not systematically collected from four-year universities to allow for their inclusion in statewide cost estimates. It was only possible to collect data from community college districts and aligned LEAs and high school campuses to derive an estimate for courses delivered on high school and community college campuses for the state. It is further assumed that funding estimates for the delivery of courses for dual credit to high school students at LEA and community college campuses should be relatively comprehensive because the community college systems are the primary IHE deliverers of courses for dual credit in Texas.

Although data collected from four-year universities are not used for the revenue funding analysis included in the first research question in this chapter (subquestion 1), course-level costs data collected from three four-year universities are utilized to address subquestions 2–4.

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<sup>21</sup> It should be noted that study participants were not directly asked about their use of FSP funding potentially generated on the basis of students' average daily attendance (ADA) to support the funding of dual credit programs, or other specific state funding streams.

***Funding Used to Cover the Cost of Delivering Courses for Dual Credit to Students on LEA and Community College Campuses***

Funding and revenue sources to pay for the cost of delivering dual credit to high school students in Texas are derived from a number of different sources, including state funding to community colleges and LEAs, payments to community colleges for tuition/fees and textbooks by students and their families, local funds (e.g., local taxes), federal funds (e.g., GEAR UP and other federal grants), and other sources (e.g., private or foundation grants, etc.).

Decisions about who pays tuition, fees, and other dual credit expenses such as textbooks and transportation are made at the local level through contractual agreements (generally referred to as institutional, partnership, or articulation agreements) between an LEA and a provider of courses for dual credit. In addition, LEAs may have alternative funding sources such as state formula or block-grant funds or discretionary grants, which may be used to help pay for dual credit costs that would otherwise be borne by students and their families. Community colleges also offer waivers for tuition and fee payments, which help to reduce the total cost of courses for dual credit for students and their families.

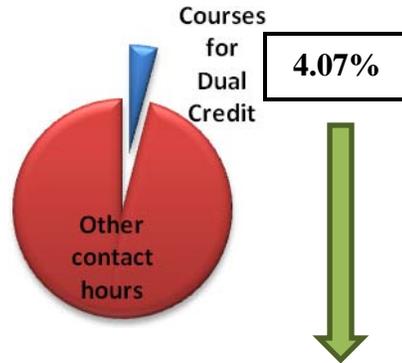
Figure 1 provides a graphic representation of the methodological approach used to estimate revenues/funding for courses for dual credit delivered to high school students at LEA and community college campuses.

**Figure 1. Process for Estimation of Funding for the Delivery of Courses for Dual Credit**

**Step 1:** Identify state appropriations for community colleges in Texas for 2009–10 =



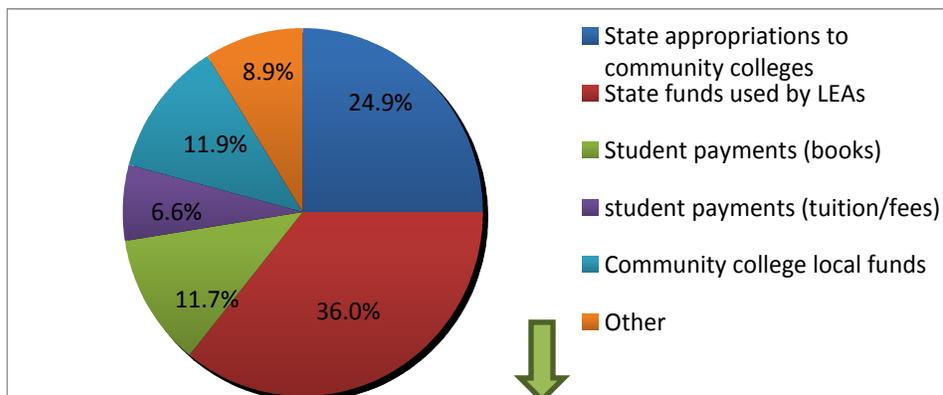
**Step 2:** Determine the proportion of total community college contact hours that are courses for dual credit =



**Step 3:** Apply this percentage (4.07%) to the overall state appropriations for community colleges in Texas for 2009–10 (\$1.1 billion) to estimate state appropriations for courses for dual credit =



**Step 4:** Using sample data collected from LEAs and community colleges, identify sources of costs for courses for dual credit =



**Step 5:** Based on sample data in Step 4, approximately 24.9% of the costs for dual credit courses are borne by state appropriations to community colleges. State appropriations for community colleges from Step 3 were estimated at \$44.75 million. Thus, \$44.75 million represents 24.9% of dual credit costs. Extrapolate total dual credit costs at the state level =



**Figure 1 (continued)**

**Step 6:** Using \$180 million as the total cost for courses for dual credit, apply percentages from Step 4 to estimate costs borne by each entity =

Funding Source	Percentage	Total Amount
State Appropriations to Community Colleges	24.9%	\$44.8 million
State Funds to LEAs	36.0%	\$64.8 million
Student Payments (Textbooks) <sup>22</sup>	11.7%	\$21.0 million
Student Payments (Tuition/Fees)	6.6%	\$11.8 million
Community Colleges—Local Funds	11.9%	\$21.4 million
Community Colleges—Other Funds	0.9%	\$1.6 million
LEAs—Local and Other Funds	5.9%	\$10.6 million
LEAs—Federal Funds	2.2%	\$3.8 million
Community Colleges—Federal Funds	0.1%	\$133,000
<b>Total Funding for Courses for Dual Credit Delivered at LEA and Community College Campuses</b>	<b>100%</b>	<b>\$180 million</b>

Source: Approach to estimating revenues/funding to cover cost of courses for dual credit delivered to high school students at LEA and community college campuses, Research Study of Texas Dual Credit Programs and Courses (Texas Education Agency, 2011)

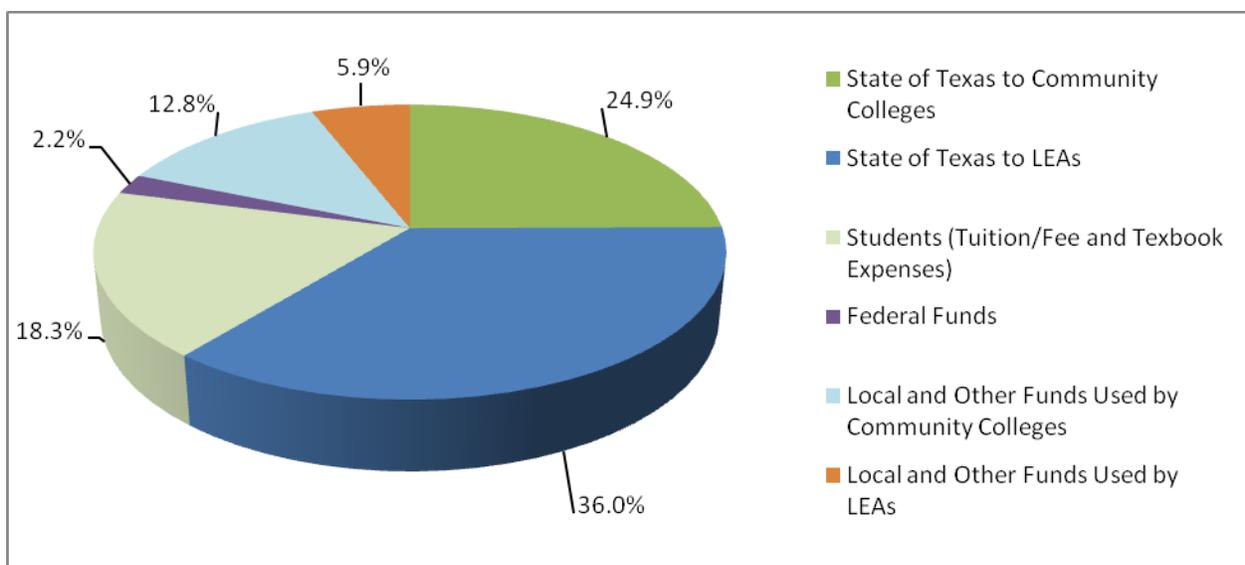
***Overall Revenues/Funding for Dual Credit Costs for Courses Delivered at LEAs and Community Colleges (i.e., Who Bears the Costs of Courses for Dual Credit?)***

Based on this exploratory analysis of dual credit revenues/funding for dual credit courses delivered at LEAs and community colleges in Texas, the total revenue and funding for the delivery of courses for dual credit is estimated to be approximately \$180 million dollars for the 2009–10 academic year. As Figure 2 shows, the majority of expenditures (61%) related to courses for dual credit in Texas were covered by

<sup>22</sup> To estimate the division of textbook expenditures between LEAs and students and their families, sample data and statewide enrollment data for courses for dual credit were used. To estimate costs, the average textbook cost per course credit hour was multiplied by the total reported semester credit hours (SCHs) attempted on each community college campus and high school in the sample. Next, average LEA textbook expenditures per SCH were calculated in the sample. Averages were weighted on the basis of SCHs attempted within each LEA. This average expenditure was then applied to the total SCHs attempted by students within the sample LEAs to estimate a total amount expended by LEAs to cover textbook costs. As no community colleges included in the sample reported covering textbook costs, it is assumed that the textbook cost was covered by students and their families or LEAs. These costs were then extrapolated to the state by applying the estimated proportion of textbook costs paid for by LEAs and students to the total estimated expenditures for delivering courses for dual credit to high school students through community college arrangements.

state appropriations to community colleges and LEAs. It is important to note that state funding to LEAs provided them with the discretion to use the funding for a wide array of education purposes, including dual credit programs. Students and their families covered an estimated 18% of the costs through tuition and fee payments to colleges and payment for textbooks used for courses for dual credit. These student payments for courses for dual credit represent a reduced amount due to LEA payments for tuition/fees and textbooks and community college tuition waivers and subsidies. The remaining 21% of the funding used to pay for the costs of dual credit courses for students was covered by local and other funds (e.g., local taxes, tuition scholarships and waivers provided by the community college, endowment funds earmarked for needy students); other funding to LEAs; and federal funding sources (GEAR UP and other federal grants to community colleges and LEAs).

**Figure 2. Sources of Funds Used to Cover Costs of Courses for Dual Credit Delivered at LEA and Community College Campuses for High School Students in Texas**



*Source:* Community college, LEA, and high school supplemental data collection, 2011; THECB, 2009–10  
*Note.* State of Texas costs include approximately \$20.7 million (\$12.0 million for tuition and fees and \$8.7 million for textbooks) in payments made by LEAs to community colleges for tuition/fees and textbooks. It is assumed that state funding to LEAs covers a substantial portion of these district payments. It is also assumed that community colleges provide tuition and fee subsidies to students taking courses for dual credit through their articulation agreements with districts and that ultimately the majority of these subsidies are likely paid for with state appropriations to community colleges. The absolute value of those subsidies could not be estimated as part of this analysis.

Table 30 provides a more granular view of how courses for dual credit delivered at LEA and community college campuses are funded, and an estimated breakdown of the amount paid by each program participant or funder for the 2009–10 academic year. It is important to keep in mind that these data are exploratory in nature and should be viewed with some degree of caution as proportions are based on a relatively small sample of community colleges, LEAs, and high schools. Several of the higher level categories displayed in Figure 1 are broken down further into their subcomponents. For instance, federal and local funds used to support courses for dual credit are separated into funds allocated to

community colleges and funding for LEAs. In addition, student payments for tuition and fees and for textbooks are reported separately.

**Table 30. Estimated Expenditures by Source for Courses for Dual Credit Courses Delivered at LEA and Community College Campuses in Texas, 2009–10**

<b>Source Subsource</b>	<b>Estimated Expenditures for Courses for Dual Credit</b>	<b>Percentage of Expenditures</b>
<b>State of Texas</b>		
State Funding to LEAs used for Courses for Dual Credit	\$64,796,950	36.0%
State Appropriations to Community Colleges	\$44,749,843	24.9%
<b>Students</b>		
Student Payments for Textbooks	\$21,046,289	11.7%
Student Payments to Community Colleges for Tuition and Fees	\$11,832,578	6.6%
<b>Local and Other Funds</b>		
Local Funds used by Community Colleges for Courses for Dual Credit	\$21,441,556	11.9%
Other Funds used by Community Colleges for Courses for Dual Credit	\$1,598,132	0.9%
Local and other Funds used by LEAs for Courses for Dual Credit	\$10,584,853	5.9%
<b>Federal Funds</b>		
Federal Funds used by Community Colleges for Courses for Dual Credit	\$133,338	0.1%
Federal Funds used by LEAs for Courses for Dual Credit	\$3,844,684	2.1%
<b>Total Funding for the Delivery of Courses for Dual Credit</b>	<b>\$180,028,223</b>	<b>100%</b>

*Source:* Community college, LEA, and high school supplemental data collection, 2011; THECB, 2009–10

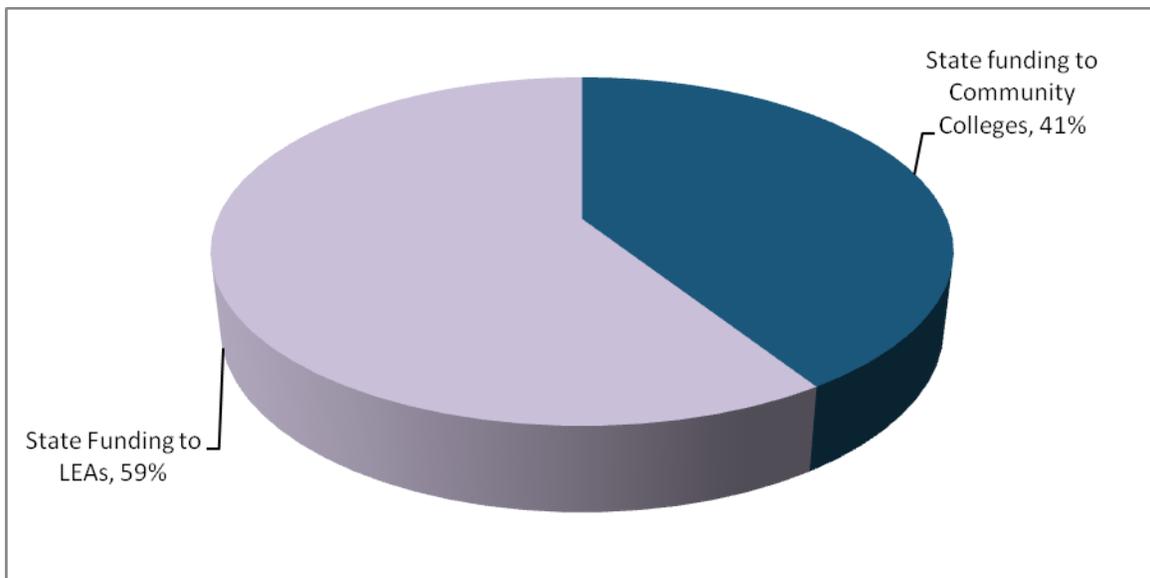
*Note.* State of Texas costs include approximately \$20.7 million (\$12.0 million for tuition and fees and \$8.7 million for textbooks) in payments made by LEAs to community colleges for tuition/fees and textbooks. It is assumed that state funding to LEAs covers a substantial portion of these district payments. It is also assumed that community colleges provide tuition and fee subsidies to students taking courses for dual credit through their articulation agreements with districts and that, ultimately, the majority of these subsidies are likely paid for with state appropriations to community colleges. The absolute value of those subsidies could not be estimated as part of this analysis.

***State Funding for Courses for Dual Credit Delivered at LEA and Community College Campuses***

As reported above, for every \$1.00 spent on courses for dual credit in Texas for the 2009–10 academic year, the state paid approximately 61 cents, with the LEAs and community colleges covering the remaining 39 cents from other sources (e.g., student payments for tuition/fees and textbooks; local,

federal, and other funding). Therefore, the overall result is that the LEAs and IHEs are expending more money on courses for dual credit than they are receiving in revenue from the state through appropriations. Of the state funds used for courses for dual credit, approximately 59% of funds were distributed to LEAs, and the remaining 41% were provided to community colleges through state appropriations (See Figure 3).

**Figure 3. Percentage of State Funds for the Delivery of Courses for Dual Credit by Community College and LEA Appropriations, 2009–10**



*Source:* Community college, LEA, and high school supplemental data collection, 2011; THECB, 2009–10

The state appropriations to community colleges are based on the total number of semester credit hours (SCHs) reported by colleges to THECB in 2009–10 and the corresponding percentage of those hours accounted for by high school students taking courses for dual credit (based on extrapolated course-level enrollment data received from the sample). Based on THECB data, a total of 19,545,499 credit hours were attempted by community college students in 2009–10, with an estimated 4.07% accounted for by high school students enrolled in courses for dual credit on college and high school campuses. This calculation results in an estimated state appropriation of approximately \$44.8 million (of the total \$1.1 billion dollars in funding statewide for all community colleges) to community colleges for the education of high school students enrolled in dual credit courses. This analysis, combined with data collected from a sample of community colleges, LEAs, and high school campuses, was used to estimate the total statewide expenditures for courses for dual credit and the proportion of expenditures that were covered by the various system participants and funders. It is important to note that out of these and other funds, community colleges also provide payments to LEAs to pay high school teachers who are teaching courses for dual credit at the high school campuses, and community colleges provide tuition subsidies to students enrolled in courses for dual credit through local and state funding streams. These amounts could not be accurately estimated through this study and are assumed to represent a portion of the state or local funds used by community colleges for the delivery of courses for dual credit, not an additional funding source or expense.

As stated previously, state funding to LEAs includes FSP funds, as well as a wide array of formula-based funding and competitive discretionary grants from the state (e.g., the High School Allotment, State Compensatory Education funding, and other state grants that may be used by LEAs to support a number of different initiatives, including courses for dual credit). Although these state funds may be used by LEAs to support dual credit programs, they are not dedicated funds for the delivery of courses for dual credit to high school students.

State funding used by LEAs is estimated at approximately \$64.8 million during the 2009–10 academic year. It is important to note that a portion of these state funds (an estimated \$20.7 million—32% of estimated state funds used by LEAs to fund courses for dual credit) include payments made by LEAs to community colleges for student tuition and fees, or payments made for textbooks for courses for dual credit.<sup>23</sup>

We do recognize that LEAs may receive additional FSP funding as a result of students enrolling in courses for dual credit, but we do not estimate that it represents a large incremental increase in funding courses for dual credit for LEAs based on funding sources reported by participants within the study sample. Full-time ADA funds may be generated from students enrolled in courses for dual credit if the student is taking a significant number of courses for dual credit such that without those courses, the ADA would not be appropriated for that student (i.e., if the student is taking fewer than five courses excluding courses for dual credit). Without evaluating each student’s schedule to determine how much of the attendance in courses for dual credit generated FSP funding, it is difficult to distinguish between the proportion of the 6% that is from FSP funding and the proportion that is from local funds.

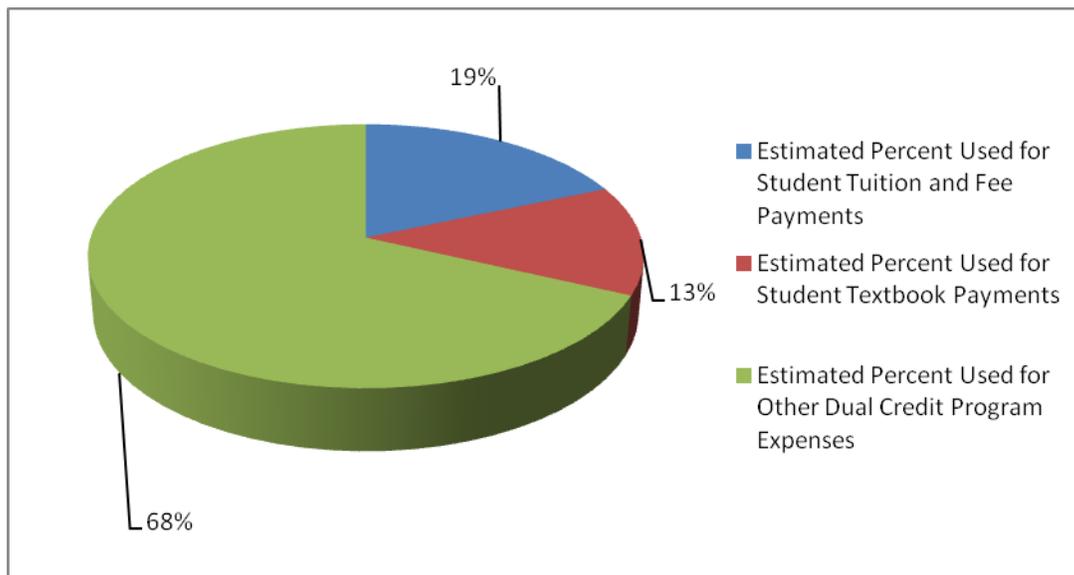
The remaining 68% of state funds were used by LEAs to support the delivery of courses for dual credit to students (see Figure 4).<sup>24</sup>

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<sup>23</sup> This estimate is based on the following calculation from data collected from community colleges: (1) For LEA payments to community colleges, tuition and fees account for approximately 58%, and textbook payments account for approximately 42%; (2) LEA payments to community colleges for tuition/fees and payments for textbooks for students enrolled in courses for dual credit account for approximately 32% of total state funds used by LEAs for dual credit (11% of total expenditures for courses for dual credit, which are accounted for by LEA tuition/fees and textbook payments divided by 33% of all expenditures for courses for dual credit accounted for by LEA use of state funds for dual credit program purposes); (3) the 32% is applied to an estimated \$64.8 million in total state funds used by LEAs for courses for dual credit to arrive at a \$20.7 million estimate for total funds used by LEAs to pay for student tuition and fees; (4) of the \$20.7 million, an estimated 58% are for tuition/fees (\$12.0 million) and 42% are for textbook payments (\$8.7 million).

<sup>24</sup> Other expenditures for courses for dual credit may include instructional costs (e.g., teacher salaries or payments to community colleges or professors for courses taught), program administration, transportation, or other expenses related to the program.

**Figure 4. Percentage of State Funds Used by LEAs to Support the Delivery of Courses for Dual Credit by Type of Expenditure**



Source: Community college, LEA, and high school supplemental data collection, 2011; THECB, 2009–10

Further, revenue and expenditure data collected from the sample of LEAs within 11 CCDs across the state indicate that LEAs are not asking students enrolled in courses for dual credit to reimburse the LEA for the purchase of textbooks or tuition/fee payments made by the LEA on students’ behalf. Thus, the student payment revenue reported by community colleges combined with the estimate of textbook payments made by students should include all student expenditures for these two items.

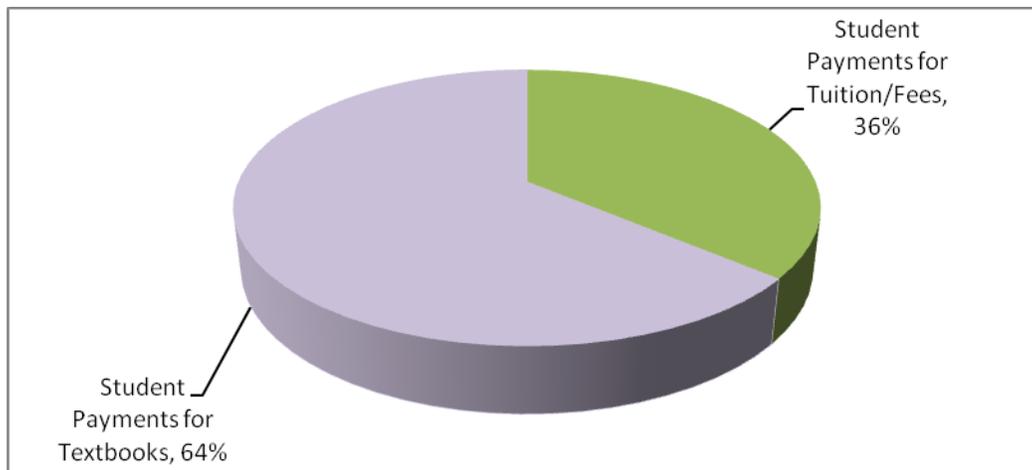
***Funding for Dual Credit Programs Received from Students/Families***

Arrangements between community colleges and LEAs vary considerably in terms of course costs and who is responsible for the payment of various expenditures related to the delivery of courses for dual credit. Thus, community colleges are subsidizing a portion of tuition and fee expenses through waivers to high school students enrolled in courses for dual credit by utilizing state and local funding sources. In addition, sometimes LEAs cover these and other costs (e.g., transportation, textbooks) as part of state-, private-, or federally funded initiatives. It is estimated that high school students and their families paid \$32.9 million for tuition/fees and textbooks related to courses for dual credit during the 2009–10 academic year. High school students enrolled in courses for dual credit and their families, through the payment of tuition/fees and the purchase of required textbooks, pay for approximately 18% of the costs of courses offered for dual credit in Texas.

As Figure 5 shows, the largest proportion of the student-paid costs of courses for dual credit (64%) was accounted for by payments for textbooks, which average approximately \$120–\$125 per course. The remaining 36% of estimated student-paid expenses for courses offered for dual credit were for tuition and fees paid directly to community colleges. The reason that students and their families cover a larger proportion of textbook expenses than tuition and fees expenses could be accounted for in the following

ways: community colleges providing tuition and fee waivers or LEAs making payments for tuition and fees.

**Figure 5. Percentage of Expenditures by Students/Families by Expenditure Category, 2009–10**



Source: Community college, LEA, and high school supplemental data collection, 2011; THECB, 2009–10

In addition to the student/family payments discussed above, high school students also may incur transportation expenses as a result of being enrolled in courses for dual credit. Cost data collected from LEAs suggest that it may be rare for LEAs to cover the costs of transporting high school students to courses for dual credit held at nearby community colleges. Although an accurate estimate of costs absorbed by students and/or their families for transportation to and from community colleges could not be determined,<sup>25</sup> it is clear that this is an additional expense to students associated with being enrolled in a course for dual credit that is delivered at a location other than a student’s high school.

Tuition and fee payments by all community college students for college courses are estimated to cover approximately 36% of the course costs compared with 18% for high school students enrolled in courses for dual credit.<sup>26</sup> The differences between the costs to community college students enrolled in college courses and high school students enrolled in courses for dual credit may be explained, at least in some cases, by LEAs paying for student tuition/fee and textbook costs and community colleges waiving the tuition and fees through the articulation agreements with LEAs. The revenue and expense data collected from the LEAs and community colleges suggest that some tuition and fees as well as textbooks are paid for by LEAs or subsidized through community college tuition waivers for students enrolled in courses for dual credit.

<sup>25</sup> Transportation data were collected from the sample. However, only four of the districts reported reasonable numbers. Therefore, accurate transportation expenditures could not be estimated and were found to be negligible on average.

<sup>26</sup> This estimate is based on an analysis of data from the 2010–11 Biennial THECB cost calculation and does not factor in the costs of textbooks for students.

### ***Local and Other Funds Used by Community Colleges to Support Dual Credit Programs***

On their supplemental financial data request forms, community colleges reported using a substantial amount of local and other funds to pay for the cost of delivering courses for dual credit to high school students in Texas. Local and other funds (e.g., local taxes, endowment funds for needy students) used by community colleges for the delivery of courses for dual credit to Texas high school students accounted for an estimated \$21.4 million, or 12% of the total costs for delivery of courses for dual credit for the 2009–10 academic year. It is also important to note that tuition for students residing within the community college district can vary substantially from tuition for students outside the district, which can impact community college revenues and student expenditures. Students residing outside of a community college district may be charged a higher tuition charge than students within a community college district.

### ***Local and Other Funds Used by LEAs to Support Dual Credit Programs***

Local and other funds used by LEAs for courses for dual credit accounted for an estimated \$10.6 million in 2009–10.<sup>27</sup> This represents approximately 6% of total statewide payments for the delivery of courses for dual credit for high school students for this time period.

Articulation agreements between community colleges and LEAs/high school campuses vary substantially in terms of the delivery modes for courses, the costs of courses, and which party bears the costs of the various aspects of the courses. As with the analysis of community college costs, local revenue sources were considered to be borne by the LEAs.

### ***Federal Funds Used to Support Dual Credit Programs***

Based on revenue and expenditure data reported by the sample of community colleges and LEAs, an estimated \$3.98 million in federal funds provided to LEAs and community colleges was used to support the delivery of courses for dual credit during the 2009–10 academic year. Federal funding (e.g., GEAR UP grants and other federal grants received by LEAs and community colleges) covered approximately 2.2% of all costs for the delivery of courses for dual credit during this period. The vast majority of federal funds spent on dual credit programs were used by LEAs rather than community colleges. Ninety-seven percent of the federal funds (or an estimated \$3.84 million) used for the delivery of courses for dual credit at community college and high school campuses was used by LEAs to support their dual credit programs. In addition, federal funds rarely were used by community colleges to support the delivery of these courses to high school students, accounting for approximately 0.1% of all expenditures related to courses for dual credit and 4% of the total federal funds used to support dual credit programs in Texas.

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<sup>27</sup> Local funds include funding derived from local property taxes, bond issues and other local sources, while other funding sources are not reported elsewhere.

## What Are the Instructional Costs Per Student Credit Hour for Hours Attempted on High School and Community College Campuses?

Courses for dual credit can be taught to students on high school campuses (by high school teachers or college professors) or on college campuses by either salaried or adjunct college professors. Some courses also are offered online through both high school online systems (such as the Texas Virtual School Network) and college online course systems. The cost structure associated with each of these delivery modes is different. To address this research question, usable<sup>28</sup> course-level resource and cost data for 2009–10 were collected from 12 IHEs (nine community colleges and three four-year universities) and 18 LEAs and high schools served by these IHEs.

IHE-course-level cost data include 855 different course offerings (with three or more dual credit students enrolled) representing 3,758 different dual credit course sections taught on college campuses by salaried and adjunct college professors. This includes 2,181 course sections (58%) taught by salaried faculty and 1,577 course sections (42%) taught by adjunct faculty at the 12 IHEs.<sup>29</sup>

Financial data were reported by 24 high school campuses and 22 LEAs. Among those were 18 complete paired campus-LEA data sets necessary for the course-level financial analysis. Paired sets of high school campuses and LEAs were required because data were used from both sources to reconstruct course-level costs at the high schools. These course-level cost data for the 18 paired sets include 135 different course offerings representing 256 different course sections taught on high school campuses by high school teachers and college professors. A total of 121 of the course sections (47.3%) were taught by high school teachers, and 135 (52.7%) were taught by college professors.<sup>30</sup>

These data were used to reconstruct per-credit-hour-cost estimates for courses for dual credit on high school and community college campuses. It is important to keep in mind that this analysis does not capture all delivery-mode distinctions that may have an impact on course costs (e.g., pay scale levels of teachers within an LEA or salary differences between professors). It is also important to note that all analyses and results for this research subquestion are based only on data collected from the study sample. Results have not been extrapolated statewide.

For purposes of this analysis, data related to “direct” costs of the dual credit programs were collected. Direct costs, such as teacher or professor pay and textbooks, relate to the delivery of the program. The costs in this analysis do not include indirect costs for items such as facilities and furnishings, utilities, custodial services, and general LEA or IHE administrative costs not directly related to the dual credit program. The following cost categories were applied:

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<sup>28</sup> Usable data means an alignment between the high school and district, and complete and reasonable data.

<sup>29</sup> These totals include courses taught to all students taking courses for dual credit on the IHE campus.

<sup>30</sup> These totals include courses taught to all students taking courses for dual credit on the high school campus.

- a. Course costs
  - Instructional payroll costs (salaries and benefits of teachers or professors or contracted pay amounts for these positions)
  - Textbook costs
  - Other course costs (equipment, materials, and supplies)
- b. Program administration costs (salaries and benefits incurred at the LEA or IHE level relating directly to the administration of the dual credit program)

The total estimated program cost per credit hour delivered at sampled high schools was \$149.40, 20% higher than at IHEs. Virtually all of the costs related to instructional payroll (\$127.43 per credit hour) and textbooks (\$21.71 per credit hour). The total estimated program cost per credit hour delivered at sampled IHEs was \$124.93. Of this amount, \$108.81 (87%) represents course delivery costs, and \$16.12 (13%) represents program administration costs. Virtually all of the course-level costs pertained to instructional payroll (\$67.76 per credit hour) and textbook (\$39.73 per credit hour) costs (see Table 31).

**Table 31. Cost Per Credit Hour by Location of Delivery, 2009–10**

	High Schools	All IHEs
Enrollment in courses for dual credit	3,773	36,199
Number of course sections	256	3,758
Number of credit hours attempted for dual credit	11,716	110,120
Instructional payroll cost per credit hour attempted	\$127.43	\$67.76
Textbook cost per credit hour attempted	\$21.71	\$39.73
Transportation cost per credit hour attempted <sup>1</sup>	—	—
Other course costs per credit hour attempted for dual credit	\$0.26	\$1.32
Total course cost per credit hour attempted for dual credit	\$149.40	\$108.81
Program administration cost per credit hour attempted for dual credit <sup>2</sup>	—	\$16.12
<b>Total direct program cost per credit hour attempted for dual credit</b>	<b>\$149.40</b>	<b>\$124.93</b>

Source: IHE, LEA, and high school supplemental data collection, 2011

Note. Dual credit program administration cost data were not collected at the high school level.

<sup>1</sup>Transportation data reported were not sufficient to develop a cost estimate for this program element. IHEs did not report any transportation costs.

<sup>2</sup>Program administration cost was estimated at the LEA level only and is presented later in the report.

The most significant factor contributing to the higher cost for courses for dual credit delivered at high schools was the average class/section size. The average class size for high school dual credit courses was 15.7; for IHEs, the average class or section size was 28.4—almost double that of the high school courses.

The cost difference due to class size was partially offset by other factors including higher textbook costs and higher salary levels at the IHEs.

The cost per credit hour for individual high schools sampled ranged from \$80.11 to \$280.74 and largely reflects the difference in average class size: 46 at the lowest cost school and 6 at the highest cost school. Cost per credit hour at individual IHEs ranged from \$88.70 to \$235.33 for colleges in the sample. This variance was due to differences in salary levels, average class sizes, and average textbook costs—all of which varied among community colleges and four-year institutions.

### **What Is the Variance in the Cost of Courses for Dual Credit by Type of IHE and Various Attributes of High Schools?**

#### ***Cost Variance by Type of IHE***

Because salary structures and other cost elements at community colleges and four-year universities differ, it is important to understand how the cost of delivery of courses for dual credit varies between these two types of institutions. It is also important to note that all analyses and results for this research subquestion are based only on data collected from the study sample. Results have not been extrapolated statewide.

Table 32 presents course information for courses for dual credit and cost per credit hour for nine community colleges and three four-year universities providing course-level data. The total dual credit program cost per credit hour is \$189.34 at four-year universities, 58% higher than the \$119.64 cost per credit hour reported by community colleges. Instructional payroll and program administration costs per credit hour are higher at four-year universities; textbook costs and other course costs are higher at community colleges.

**Table 32. IHE Cost Per Credit Hour by Location of Course Delivery, 2009–10**

	<b>Community Colleges (N = 9)</b>	<b>Four-Year Universities (N = 3)</b>
Enrollment in courses for dual credit	33,412	2,787
Course sections in which three or more students enrolled in courses for dual credit	3,438	320
Number of credit hours attempted for dual credit	101,750	8,370
Instructional payroll cost per credit hour attempted for dual credit	\$63.28	\$122.23
Textbook cost per credit hour attempted for dual credit	\$40.28	\$33.07
Transportation cost per credit hour attempted for dual credit	\$ 0	\$ 0
Other course costs per credit hour attempted for dual credit	\$1.43	\$0
Total course cost per credit hour attempted for dual credit	\$104.99	\$155.30
Program administration cost per credit hour attempted	\$14.65	\$34.04
<b>Total direct dual credit program cost per credit hour attempted for dual credit</b>	<b>\$119.64</b>	<b>\$189.34</b>

Source: IHE supplemental data collection, 2011

Note. Other costs associated with the delivery of courses for dual credit include course fees for software and lab equipment, etc.

The major factors that drive the differences in cost between community colleges and four-year universities include the following:

- The average (mean) professor salary at community colleges in 2009–10 was \$50,795; the average at four-year universities was \$71,721, 41% higher than community colleges.
- Despite providing four times the number of credit hours to students, community colleges had levels of program administration similar to four-year universities. On average, students attempted 11,305 credit hours at community colleges and 2,790 credit hours on average at four-year universities. Program administration full-time equivalents averaged 2.53 at community colleges and 2.42 at four-year universities.<sup>31</sup> This difference contributed to a cost per credit hour for program administration that was substantially higher at four-year universities.
- An offsetting factor is that the average class (section) size at four-year universities was larger (40.1) than at community colleges (27.3). This difference causes course costs to be dispersed among more students, lowering the cost per credit hour.

In 2009–10, community college program cost per credit hour at individual institutions ranged from \$88.70 to \$158.68. The primary cause for this difference was average class (section) size. The institution

<sup>31</sup> These numbers represent an average of full-time equivalent personnel that IHEs reported being dedicated to dual credit program administration. These are fractions of staff time used for dual credit only.

with \$158.68 per-credit-hour cost had an average class size (15.1) that was 41% lower than that reported by the institution on the lower end of the range (26.7).

The cost per credit hour ranged from \$123.31 to \$235.33 among the four-year universities included in the sample. This range was driven primarily by different class sizes and variances in average professor pay among the four-year universities.

The cost comparisons between community colleges and four-year universities should be viewed with caution because of the small number of four-year universities included in this analysis.

### ***Cost Variance by High School Characteristics***

The cost of courses for dual credit and the propensity of students to access these courses may be influenced by the characteristics of the campus and student population (e.g., size of high school, high school accountability rating, and percentage of economically disadvantaged students). The articulation agreements or LEA policies may include provisions providing reduced-cost or free courses for dual credit to economically disadvantaged students who may not otherwise be able to afford the cost of the college-level courses. To address this issue, the per-credit cost estimates were disaggregated for reporting high schools by the following characteristics:

- High school size (enrollment)
- High school state accountability rating
- Percentage of economically disadvantaged students at the high school

### ***Size of High School***

The enrollment of the high school—as opposed to LEA enrollment—was used to determine if cost differences exist based on size. The factors most likely to affect cost, such as class size, were more prevalent at the school level than the LEA level because large high schools tend to have similar cost patterns regardless of the size of the LEA. Accordingly, the high schools were divided into two size categories, those above the median of 942 students (of high schools included in the sample) and those at or below the median. Results are reported separately for the larger and smaller high schools (see Table 33).

Overall course-level cost per dual credit hour attempted ranged from \$145.42 to \$154.17. However, variances among individual cost categories were larger than the range in total cost per credit hour and largely offset each other. Instructional payroll costs per credit hour were 37% higher at the smaller high schools; textbook costs were 86% lower.

**Table 33. Cost Per Credit Hour by High School Size, 2009–10**

	<b>Large High Schools (N = 9)</b>	<b>Small High Schools (N = 9)</b>
Enrollment in courses for dual credit	2,109	1,664
Course sections in which students were enrolled in courses for dual credit	132	124
Number of credit hours attempted for dual credit	6,388	5,328
Instructional payroll cost per credit hour attempted for dual credit	\$109.39	\$149.07
Textbook cost per credit hour attempted for dual credit	\$35.56	\$5.10
Other course costs per credit hour attempted for dual credit	\$0.47	\$0
<b>Total course cost per credit hour attempted for dual credit</b>	<b>\$145.42</b>	<b>\$154.17</b>

Source: LEA and high school supplemental data collection, 2011

High instructional payroll costs per credit hour at the smaller high schools were due to smaller class sizes (14.8 versus 16.5 at larger high schools), offset somewhat by lower average teacher pay (\$44,943 versus \$48,788 at larger high schools). Four of the nine smaller high schools—representing 84% of the credit hours—did not report any textbook costs, and one of these provided online courses only. All large high schools reported textbook costs.

### ***High School Performance***

Table 34 shows the cost per credit hour results by the high school accountability ratings represented in the sample—Academically Acceptable, Recognized, and Exemplary. There were no Academically Unacceptable high schools that provided complete course-level data. Exemplary high schools have the lowest cost per credit hour at \$124.52; Academically Acceptable schools show the highest cost at \$196.07.

**Table 34. Cost Per Credit Hour by Campus State Accountability Rating, 2009–10**

	<b>Acceptable (N = 4)</b>	<b>Recognized (N = 8)</b>	<b>Exemplary (N = 6)</b>
Enrollment in courses for dual credit	948	928	1,897
Course sections in which students were enrolled in courses for dual credit	75	61	120
Number of credit hours attempted for dual credit	2,893	2,784	6,039
Instructional payroll cost per credit hour attempted for dual credit	\$158.95	\$122.29	\$114.71
Textbook cost per credit hour attempted for dual credit	\$37.12	\$31.49	\$9.81
Other course costs per credit hour attempted for dual credit	\$0	\$1.08	\$0
<b>Total course cost per credit hour attempted for dual credit</b>	<b>\$196.07</b>	<b>\$154.86</b>	<b>\$124.52</b>

Source: LEA and high school supplemental data collection, 2011; AEIS, 2009–10

The cost per credit hour differential may be explained by several factors. Exemplary schools reported the largest average class size (17.0) compared with Acceptable (13.9) and Recognized (15.3) schools. This may be due in part to more high school students being eligible for courses for dual credit at Exemplary schools. The Exemplary high schools also included one high school where only online courses are provided and the percentage of teacher effort relative to a classroom model was 60%. Virtually all other schools reported 100% or higher effort. Lower instructor effort factored into a lower instructional payroll cost for that campus. Textbook costs were substantially lower at the Exemplary schools, as two of the six Exemplary high schools—representing 69% of the total credit hours attempted—did not report any textbook costs.

### ***Economically Disadvantaged Students on Campus***

Table 35 presents results by two economically disadvantaged categories of high schools in the study sample—those above the state average of 59% of students considered economically disadvantaged and those at or below it. High schools with smaller populations of economically disadvantaged students incurred higher costs (\$161.88) than high schools with larger economically disadvantaged populations (\$137.79).

**Table 35. Cost Per Credit Hour by Economically Disadvantaged Percentage, 2009–10**

	<b>Smaller Proportion of Economically Disadvantaged Students (N = 12)</b>	<b>Larger Proportion of Economically Disadvantaged Students (N = 6)</b>
Enrollment in courses for dual credit	1,761	2,012
Number of course sections	125	131
Number of credit hours attempted for dual credit	5,644	6,072
Instructional payroll cost per credit hour attempted for dual credit	\$148.96	\$107.42
Textbook cost per credit hour attempted for dual credit	\$12.92	\$29.88
Other course costs per credit hour attempted for dual credit	\$0	\$0.49
<b>Total course cost per credit hour attempted for dual credit</b>	<b>\$161.88</b>	<b>\$137.79</b>

Source: LEA and high school supplemental data collection, 2011; AEIS, 2009–10

Most of the difference in cost was due to teacher and professor pay differentials, as average class sizes were similar for both low and high economically disadvantaged populations (15.5 and 15.9 respectively). Textbook costs at schools with larger populations of economically disadvantaged students were more than double those of schools with smaller populations. Only two high schools reported no textbook costs, but these two schools represented two thirds of the dual credit hours attempted at schools with larger proportions of economically disadvantaged students.

### **What Is the Cost-Effectiveness of Courses for Dual Credit by Various Modes of Delivery?**

The two primary modes of delivery for dual credit courses are classroom and a variety of online options. Course-level data were collected from high schools and IHEs by mode of delivery to reconstruct separate cost estimates for classroom and online instruction. It is important to note that all analyses and results for this research subquestion are based only on data collected from the study sample. Results have not been extrapolated statewide.

Table 36 presents the participation in courses for dual credit and per-credit-hour costs for classroom and online delivery modes for IHEs. Based on reported data, online courses were more expensive than classroom delivery models. The cost per credit hour was \$124.84 for online courses, 24% higher than the cost of \$103.20 for classroom instruction.<sup>32</sup>

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<sup>32</sup> Program administration was excluded from this analysis because data were collected at the district level only.

**Table 36. Cost Per Credit Hour by Mode of Course Delivery, IHEs, 2009–10**

	<b>Classroom (N = 12)</b>	<b>Online (N = 11)</b>
Enrollment in courses for dual credit	26,924	9,275
Number of course sections	3,023	735
Number of credit hours attempted for dual credit	82,292	27,828
Instructional payroll cost per credit hour attempted for dual credit	\$62.24	\$84.06
Textbook cost per credit hour attempted for dual credit	\$39.85	\$38.84
Other course costs per credit hour attempted for dual credit	\$1.11	\$1.94
<b>Total course cost per credit hour attempted for dual credit</b>	<b>\$103.20</b>	<b>\$124.84</b>

Source: IHE supplemental data collection, 2011; AEIS, 2009–10

Based on the IHEs sampled, two factors appear to explain this unusual result:

- Most IHEs reported that the same or more professor effort was required for online instruction relative to classroom instruction. To estimate the professor time in an online delivery model, IHEs were asked to provide a percentage of classroom effort that is devoted to an online course. Only one IHE reported a percentage (60%) that was substantially less than a classroom effort. Most IHEs reported the same (100%) effort, and some reported up to 150% of classroom effort. Follow-up calls were made to validate IHE responses to ensure that the data request was understood. IHE representatives validated their percentages and stated that for many courses, professors actually spend more time communicating with students individually in an online setting.
- The average class (section) size for online courses was smaller than for classroom courses. Online courses averaged 21.6 students per section. Classroom courses averaged 30.1 students per section. For a majority of IHEs, the same or higher cost levels were dispersed among fewer students, resulting in higher per-credit-hour costs for online delivery. Courses offered online have the ability to reach a larger number of students than those offered through classroom delivery, but based on the IHEs sampled, the “average class size” of online sections is smaller than the average classroom section.

Community college online models were less expensive than university models, primarily because of differences in average professor pay and because two of the three universities reported more than 100% of professor classroom effort for their online courses.

In high schools, the cost differential for online courses was larger than for IHEs. Eight of the 18 high schools reported online courses as the mode of delivery for dual credit, and two high schools reported delivering only online courses for dual credit. Course cost for classroom delivery models at high schools was \$139.16 per credit hour, compared with \$200.78 per credit hour for online instruction (see Table 37). All online courses reported by the high schools included in the sample were taught by a college professor.

**Table 37. Cost Per Credit Hour by Mode of Course Delivery, High Schools, 2009–10**

	<b>Classroom (N = 16)</b>	<b>Online (N = 8)</b>
Enrollment in courses for dual credit	3,125	648
Number of course sections	189	67
Number of credit hours attempted for dual credit	9,770	1,946
Instructional payroll cost per credit hour attempted for dual credit	\$ 118.89	\$ 170.32
Textbook cost per credit hour attempted for dual credit	\$ 19.96	\$ 30.46
Other course costs per credit hour attempted for dual credit	\$ 0.31	\$ 0
<b>Total course cost per credit hour attempted for dual credit</b>	<b>\$ 139.16</b>	<b>\$ 200.78</b>

Source: LEA and high school supplemental data collection, 2011

The majority of the difference in cost relates to smaller section sizes for online courses. The average number of students per high school online section was 9.7, and the average number of students per section/class in the high school classroom delivery model was 17.8.

### Summary

A summary of findings related to how dual credit programs are funded in Texas and the cost of delivering courses for dual credit to high school students in Texas are presented below. It is important to emphasize that these findings are exploratory in nature and should be interpreted with caution because of the relatively small samples used to extrapolate findings to the state.

**Costs of Delivering Courses for Dual Credit and Their Distribution Across Participants and Funders.** The analysis of the costs of delivering courses for dual credit yielded the following findings:

- The state of Texas, through state appropriations to community colleges and state funding to LEAs, pays for the majority (60.9%) of costs associated with dual credit courses for high school students.
- Of the state funds used for dual credit, approximately 59% were distributed to LEAs through funding, and the remaining 41% were provided to community colleges through state appropriations.
- A substantial proportion (32%) of state funds used by LEAs to support dual credit were utilized to pay for tuition and fees to IHEs on behalf of students (19%) and for textbooks (13%) for courses for dual credit.
- Local (e.g., local taxes, dual credit tuition waivers and scholarships, endowment funds for needy students) and other funds (e.g., private foundation grants) used by community colleges account for approximately 12.8% of costs associated with delivering courses for dual credit to high school students in Texas.

- Local (e.g., local taxes) and other funds used by LEAs account for approximately 5.9% of costs associated with delivering courses for dual credit to high school students in Texas.
- Sampled LEAs indicated that they do not recoup tuition and fees or textbook cost payments from students for courses for dual credit.
- Sampled LEAs rarely reported that they provide transportation for students taking courses for dual credit at nearby IHEs. These transportation costs are borne by students and their families.
- Students and their families pay for an estimated 18.3% of costs associated with dual credit courses through the payment of tuition and fees to community colleges and the purchase of course textbooks.
- The largest proportion of student-paid costs for courses for dual credit (64%) is accounted for by payments for course textbooks, which average approximately \$120–\$125 per course.
- Thirty-six percent of student-paid expenses for courses for dual credit are accounted for by tuition and fee payments to IHEs.
- Federal funds cover a small proportion (2.2%) of the cost of dual credit programs, and the vast majority of these federal funds (97%) were used by LEAs.

**Instructional Costs Per Student Credit Hour for Hours Attempted on High School and Community College Campuses.** Key findings related to instructional costs are summarized below.

- For the study sample, the total program cost per credit hour at IHEs is approximately \$125, with 87% representing course delivery costs and 13% representing program administration costs.
- The vast majority of course delivery costs account for instructional payroll (62.3%) and textbooks (36.5%) in the study sample.
- The most significant factor contributing to the higher cost at high schools was the average class/section size. The average class size for high school dual credit courses was 15.7; for IHEs, it was 28.4.
- The cost difference due to class size was offset partially by other factors including higher textbook costs and higher salary levels at the IHEs.
- The cost per credit hour for individual high schools sampled ranged from \$80.11 to \$280.74 and largely reflected the difference in average class size (46.0 at the lowest cost school and 6.0 at the highest cost school). Cost per credit hour at individual IHEs ranged from \$88.70 to \$235.33 for colleges in the sample.
- Variance in instructional costs per credit hour was due to differences in salary levels, average class sizes, and average textbook costs—all of which varied among community colleges and four-year institutions.

**Variance in the Cost for Courses for Dual Credit by Type of IHE, LEA Size, and Student Enrollment.** The cost of courses for dual credit varied by type of IHE, LEA size, and student enrollment, campus AEIS ratings, and percentage of economically disadvantaged students.

- Total direct program costs per credit hour attempted for dual credit were substantially higher (58%) at four-year universities (\$189) than at community colleges (\$120) for the study sample.
- For the study sample, differential cost drivers between community colleges and four-year universities include differences in professor salaries (mean community college professor salary

was \$50,795 compared with \$71,721 at four-year universities) and differences in program administration costs cost per credit hour (administration costs were distributed over a higher number of credit hours attempted at community colleges).

- Course costs per credit hour attempted for dual credit were slightly lower for larger high schools (\$145) than for smaller high schools (\$154) in the sample.
- Differences in costs per credit hour attempted for dual credit were observed on high school campuses in the sample with Acceptable (\$196), Recognized (\$155), and Exemplary (\$125) AEIS ratings. Cost differentials may be explained by several factors including larger average class sizes at Exemplary schools (possibly due in part to more students being eligible for courses for dual credit at these higher performing schools) and lower reported textbook costs at Exemplary schools.
- In the study sample, high schools with higher proportions of economically disadvantaged students than the state average (59%) had lower costs per credit hour attempted for dual credit (\$138) compared with campuses with smaller proportions of economically disadvantaged students (\$162). This variation was driven primarily by differences in class/section size and instructional payroll costs per credit hour attempted.

**Cost-Effectiveness of Courses for Dual Credit by Various Modes of Delivery.** The cost effectiveness of courses for dual credit varied by mode of delivery (delivered on an IHE campus, delivery on high school campus, and online delivery).

- In the study sample, differences were observed in the total cost per credit hour attempted for dual credit for the two primary modes of delivering courses for dual credit. The cost per credit hour for courses for dual credit delivered in an IHE classroom was \$100 compared to \$125 for the delivery of IHE online courses.
- Two factors helped to explain the differences in cost by mode of delivery. First, the proportion of time spent by teachers of online courses was greater than the same effort to deliver the course in a face-to-face environment. One possible explanation of this finding is that instructors may need more time for communicating with students individually in an online setting. Second, the average course section size for online courses was smaller (average 21.6 students per section) than for classroom courses (average 30.1 students per section).
- The online delivery mode also was more expensive when delivered through high schools, with a course cost per credit hour of \$201 for online delivery versus \$139 for classroom delivery (largely explained by class section size).

## Conclusion and Recommendations

This section draws conclusions from the findings, presented above, of the study by AIR and the Gibson Consulting Group of dual credit programs and courses delivered during the 2009–10 academic year as well as the costs and context of the programs and courses during that year. The conclusions are the basis for “action-oriented, pragmatic policy recommendations to the 82nd Texas Legislature regarding dual credit programs and courses” (RFP, p. 6).

The conclusions and recommendations are based on three types of data: (1) relevant extant data from TEA and THECB; (2) data obtained from telephone surveys of responding key administrators or staff from a purposive sample of IHEs, LEAs, and high schools, the design for which involved sampling from 12 dual enrollment “clusters” made up of high schools, LEAs, and IHEs throughout the state that supply and make use of courses for dual credit through contractual relationships with each other; and (3) supplementary course and financial data obtained from the sample of IHEs, LEAs, and high schools. **The sample is illustrative and not representative.**

### The State Context

**Statewide Enrollment Patterns.** Overall, the findings from the statewide data on enrollment in courses for dual credit indicate growth in enrollments over time. Total state enrollment in courses for dual credit rose from 71,803 in 2007–08 to 94,232 in 2009–10, an increase of 31%. An examination of enrollment in courses for dual credit by student characteristics revealed different patterns of participation among student subgroups. For example, male students were underrepresented among students who were enrolled in courses for dual credit relative to their representation within the high school population as a whole; white students were overrepresented, and other racial/ethnic groups, particularly African-American students, were underrepresented relative to their representation within the high school population as a whole; economically disadvantaged students also were underrepresented. An analysis of school characteristics that were predictive of enrollment in courses for dual credit also revealed differences in participation rates among schools with students who were enrolled in courses for dual credit. For example, schools located in rural areas and schools that had higher percentages of African-American students, LEP students, and students taking AP/IB exams had lower enrollment rates in courses for dual credit, controlling for school size and other school characteristics included in the analysis.

Differences in participation rates in courses for dual credit may reflect differences in academic achievement among various subgroups (e.g., between male and female students or between economically disadvantaged students and students who are not economically disadvantaged). Because students must meet academic eligibility requirements to enroll in courses for dual credit, student subgroups that have lower average achievement are likely to be underrepresented among students who enroll in courses for dual credit. Some of these differences, such as lower enrollment rates among African-American students and schools with high percentages of African-American students, may be a cause for concern. Others, such as lower enrollment rates at schools with high percentages of students

taking AP/IB exams, are not surprising because AP/IB courses are an alternative means for high school students to earn college credit.

**Course Availability and Course-Taking Patterns.** Within the state as a whole, a wide variety of courses for dual credit is available to students in both academic and career or technical areas. An analysis of enrollment in courses for dual credit by subject area revealed that approximately 70% of courses taken by high students were in core academic subject areas such as social studies/history (31%), English language arts (26%), mathematics (8%), and science (4%); 20% of courses were in career or technical education and computer science. Approximately 6% of the courses fell into the category of “other.”

An examination of enrollment in specific types of dual enrollment courses by student characteristics revealed different patterns of course enrollment by student subgroups. For example, African-American and Hispanic students took greater concentrations of coursework for dual credit in career or technical education and computer science and lower concentrations in core academic subjects such as social studies/history and English language arts compared with white and Asian students. Economically disadvantaged students also took greater concentrations of coursework in career or technical education and computer science than students who were not economically disadvantaged. Such differences may reflect long-standing achievement gaps among students in these subgroups. The student eligibility requirements for career or technical education courses are lower than those for core academic courses. To qualify to enroll in career or technical education courses or computer science courses, students only have to meet the passing standard on TAKS; to qualify to enroll in academic courses, students must satisfy the standard for the higher education readiness component or meet TSI requirements.

**Student Performance.** The findings regarding student performance in courses for dual credit were generally positive. Virtually all students (99.9%) who enrolled in courses for dual credit completed these courses, and most (94% or more across different subject areas) also received passing grades for the affiliated high school course. At least 95% of students who were enrolled in courses for dual credit in 2009–10 also met basic TAKS proficiency standards in all subject areas on the 2010 TAKS.

The percentage of students who were enrolled in courses for dual credit in 2009–10 and were commended on the 2010 TAKS varied both by course type and TAKS subject area. Overall, a smaller percentage of students who were enrolled in computer science courses and career or technical courses for dual credit received a commended rating on TAKS subject area assessments compared with students who were enrolled in other courses. For example, among students who were enrolled in career or technical education courses, 29% were commended in reading, 27% were commended in math, 18% were commended in science, and 54% were commended in social studies. In contrast, among students who were enrolled in mathematics courses, 67% were commended in reading, 70% were commended in math, 48% were commended in science, and 85% were commended in social studies. These differences again reflect differences in student eligibility requirements between academic courses and career or technical courses and computer courses.

The percentage of students who were enrolled in courses for dual credit and who met the dual credit eligibility standards or TSI exemption standards in English language arts and mathematics also varied by

course type and TAKS subject area. These standards are defined in relation to student performance on the TAKS. In particular, to meet dual credit eligibility standards or TSI exemption standards in English language arts, students need to score at least 2200 on TAKS- English Language Arts and receive a score of at least 3 on their written essay. In mathematics, students need to score at least 2200 on TAKS-Math. Overall, the percentage of students who met dual credit eligibility standards for academic courses was higher for students who were enrolled in core academic courses (English language arts, mathematics, science, and social studies/history) than for students who were enrolled in career or technical education courses and computer science courses. For example, among students who were enrolled in career or technical courses, 60% met eligibility standards for academic courses on TAKS- English Language Arts, and 66% met TSI standards for academic courses on TAKS-Math. In contrast, among students who were enrolled in mathematics courses, 86% met eligibility standards in English language arts and 97% met eligibility standards in mathematics. Again, differences in the percentage of students meeting eligibility standards reflect differences in requirements between academic courses and career or technical courses and computer science courses.

It should be noted that beginning in the 2011–12 academic year, TEA will begin implementation of the State of Texas Assessments of Academic Readiness (STAAR) in place of the current TAKS assessment. This shift will necessitate a reformulation of the current benchmarks for determining college readiness and dual credit eligibility standards. Therefore, these impending changes should be considered before any policy changes are implemented based on student performance findings.

## **Survey Findings**

Findings from surveys of sampled IHEs, LEAs, and high schools (HSs) are consistent with the statewide findings with regard to the types of courses that are available to high school students for dual credit (e.g., core academic courses; electives in fine arts, foreign languages, and computer science; and career or technical education courses). Most respondents reported that courses for dual credit were offered in core academic subjects such as social studies/history (100% IHEs, 94% LEAs, 94% HSs) and English language arts (100% IHEs, 92% LEAs, 93% HSs). The majority of respondents from IHEs, LEAs, and high schools also reported that career or technical education courses were offered for dual credit (73% IHEs, 56% LEAs, 62% HSs). Respondents from IHEs more frequently reported that elective courses were offered than respondents from LEAs and high schools, perhaps because of the greater availability of qualified faculty at IHEs to teach these courses. For example, 93% of IHEs reported that fine arts courses were offered compared with 33% of LEAs and 32% of high schools.

Respondents generally reported that several measures were taken to ensure the quality of courses for dual credit, including coordination between IHEs and LEAs to align courses for dual credit with TEKS standards. Respondents from LEAs and high schools also reported reviewing IHE syllabi for alignment with TEKS and monitoring teacher quality, the curriculum, and pedagogy of courses offered for dual credit to ensure course quality.

Overall, respondents reported that courses for dual credit were consistently rigorous across courses and that courses for dual credit offered on high school campuses were as rigorous as those offered on

college campuses. Among high school respondents who provided comparative ratings of AP courses and courses for dual credit, 42% reported that AP courses and courses for dual credit were equally rigorous, 45% reported that AP courses were more rigorous than courses for dual credit, and 13% reported that courses for dual credit were more rigorous than AP courses. Among high school respondents who provided comparative ratings of IB courses and courses for dual credit, 50% reported that IB courses and courses for dual credit were equally rigorous, 38% reported that IB courses were more rigorous than courses for dual credit, and 13% reported that courses for dual credit were more rigorous than IB courses.

Survey respondents reported that a variety of institutional policies and requirements exist with regard to student eligibility for enrollment in courses for dual credit and student support services for enrollees. Consistent with state requirements for enrollment in courses for dual credit, most (but not all) respondents indicated that students had to receive a minimum score on a standardized test and be at a specific grade level (e.g., Grade 11 or 12) before they could enroll in a course for dual credit. Most respondents also reported that students had to receive approval from their school and meet the IHE's standard admission requirements to enroll in courses for dual credit.

Respondents indicated that several types of information and supports were made available to students who enrolled in courses for dual credit or were considering enrolling, including publicizing the availability of their dual credit programs to all students and providing counseling specific to courses for dual credit. Most IHEs also reported that they provided specialized training to high school staff related to the dual credit program.

Overall, the survey findings indicate that IHEs, LEAs, and high schools use multiple means to ensure the quality and rigor of courses for dual credit and have established policies to ensure that students meet dual enrollment eligibility requirements and are provided with information and counseling supports specific to courses for dual credit. However, among respondents who provided comparative ratings of AP, IB, and dual credit courses, a sizeable percentage (45%) viewed AP courses as more rigorous than courses for dual credit; a similar percentage (38%) viewed IB courses as more rigorous than courses for dual credit. These findings suggest that there may be a need for greater monitoring of the quality and rigor of courses for dual credit. Responses to questions about student eligibility requirements for enrolling in courses for dual credit also suggest that some administrators of dual credit programs may not be familiar with all state eligibility requirements. For example, although the state requires students to meet dual credit eligibility standards by achieving a minimum score on a standardized test such as TAKS, only 80% of administrators at IHEs reported that students must meet this requirement to enroll in courses for dual credit. As indicated in a recent audit report on dual credit programs in Texas (Texas State Auditor's Office, 2010), some IHEs and LEAs may need to improve both their monitoring and evaluation of courses for dual credit and as well as their procedures for ensuring compliance with state student eligibility requirements.

## **The Cost of Dual Credit Programs**

**Statewide Funding Estimates for Courses for Dual Credit in Texas.** Based on an exploratory analysis of revenue and expenditures data for courses for the delivery of dual credit courses to high school students at LEAs and community colleges in Texas, dual credit program funding/revenue are estimated at approximately \$180 million for the 2009–10 academic year. The state of Texas covered the majority (61%) of costs associated with courses for dual credit for high school students through state funding (e.g., Foundation School Program, State Compensatory Education funds, High School Allotment funds, formula and discretionary grants, etc.) to LEAs (36%) and state appropriations to community colleges (25%). A substantial proportion (32%) of state funds used by LEAs to support dual credit programs went toward tuition and fees (19%) and textbooks (13%) for courses for dual credit.

Revenue generated from students and their families through the payment of tuition and fees to community colleges and the purchase of course textbooks accounted for just over 18% of the 2009–10 funding for courses for dual credit delivered to students at LEA and community college campuses. Because of LEA subsidies of tuition/fees and textbook costs (described above) and community college tuition waivers documented in articulation agreements with LEAs, this figure of 18% for high school students enrolled in courses for dual credit is substantially lower than the estimated 36% of course costs (excluding textbook costs) that are covered by community college students in general.

Almost 13% of the funding for dual credit programs was accounted for by local and other funds used by IHEs, and approximately 6% of the funding came from local and other funding sources used by LEAs. Federal funding accounted for a small proportion of funding for dual credit programs in Texas (2%), and this funding came primarily in the form of grants to LEAs.

**Instructional Cost Per Student Credit Hour.** For the study sample, the average program cost per credit hour attempted at IHEs was approximately \$125, with 87% representing course delivery costs and 13% representing program administration costs. The vast majority of course delivery costs are accounted for by instructional payroll (62%) and textbooks (37%). At high schools, the average program cost per credit hour was \$149, virtually all of which related to instructional payroll (85%) and textbooks (15%). Instructional costs per credit hour varied widely—from \$80.11 to \$280.74 among sampled high schools and from \$88.70 to \$235.33 among sampled IHEs. The most significant factor contributing to higher costs at high schools was average class/section size, which was 15.7 for sampled high schools and 28.4 IHEs sampled.

**Variance in the Cost of Courses for Dual Credit by Type of IHE and Various Attributes of High Schools.** Within the study sample, program costs per credit hour for courses for dual credit were substantially higher at four-year universities (\$189) than at community colleges (\$120). This variation was largely due to higher professor salaries and administrative costs at four-year universities, and partially offset by larger classes at four-year universities. At the high schools sampled, cost data were analyzed for lower level groupings based on enrollment, percentage of economically disadvantaged students, and state accountability ratings. The costs per credit hour were slightly lower for larger high schools (\$145) than smaller high schools (\$154) in the sample. High schools with higher proportions of economically disadvantaged students than the state average had lower costs per credit hour attempted for dual credit courses (\$138) compared with campuses with smaller proportions of economically disadvantaged

students (\$162). There was an inverse relationship between high school accountability ratings and cost per credit hour – the higher the rating, the lower the cost. Average class size was the most dominant factor in explaining variances of all high school costs. Also, several high schools with larger dual credit programs reported zero costs for textbooks.

**Cost Effectiveness of Courses for Dual Credit by Delivery Mode.** For the study sample, the cost per credit hour for courses for dual credit delivered in an IHE classroom was \$103, compared with \$125 for the delivery of IHE online courses. The proportion of time spent by instructors for online courses (reported as a percentage of classroom effort) was actually greater than for face-to-face instruction (perhaps due to greater time spent in individual communication with students taking online courses). Also, the average class/section size for online courses was smaller than for courses offered in the classroom. For high schools, the cost of online delivery was also higher than classroom delivery, primarily due to differences in class/section size.

## **Recommendations**

Based on a review of the study findings, the following policy recommendations about the supply of, demand for, and access to programs and courses for dual credit are offered for consideration by the 82nd Texas Legislature. The recommendations are organized by key policy questions posed by TEA in the request for proposals to conduct the current study of Texas dual credit programs and courses.

1. How can the state provide each student the opportunity to earn 12 semester credit hours of college credit before graduating high school?

This question is primarily about the supply of courses and programs for dual credit needed so that each student has the opportunity to earn 12 semester credit hours of college before graduating high school. Findings suggest that the supply of courses for dual credit was generally adequate for the demand during the three-year-period covered by the study (2007–08, 2008–09, and 2009–10). However, the study also found that enrollment rates varied by subjects, student demographic characteristics and academic performance, and school demographic characteristics and Academic Excellence Indicator System (AEIS) status. These findings suggest the possibility of inadequate supply for the demand where students did not have opportunity to enroll in courses or programs for dual credit in which they wanted to enroll. In other words, enrollment rate differences for courses for dual credit between students from schools differing in location, size, or performance may be due to a difference in course availability or number of openings in courses to students from the differing schools.

It is recommended that the 82nd Texas Legislature consider the state’s role in ensuring that there is an adequate supply of courses and programs for dual credit—adequate in amount and adequately distributed to eligible high schools students in the state—so that each student has the opportunity to earn 12 semester credit hours of college before graduating high school. It is suggested that the state should undertake or encourage the development and implementation of a mechanism to estimate demand for programs and courses for dual credit throughout the state. The state also might play a more

extensive role such as developing and providing courses and programs for which there is a need, or encouraging or funding through competitively awarded contracts these and other supply-side activities.

2. How can the state promote the ability of students to access quality dual credit programs and courses?

The evaluation team understands this question to be about high school students' demand for and access to quality courses and programs for dual credit, in other words, students' interest in taking advantage of opportunities to enroll in high-quality courses and programs for dual credit, and their ability to do so successfully.

First, the study found no evidence that dual credit courses or programs were perceived to be of lower quality than either similarly titled high school or IHE courses. However, as noted above, the study also found that enrollment rates varied by subjects, student demographic characteristics and academic performance, and school demographic characteristics and AEIS status. These findings suggest the possibility of inadequate demand for the supply where students did not enroll in courses or programs for dual credit for which they had an opportunity to enroll. For instance, it is likely that the proportion of students in some schools who were not inclined or were not encouraged to enroll in courses for dual credit was higher than the proportion in other schools differing in location, size, or performance.

The state has three areas where it can focus its efforts to promote students' interest in and ability to access quality dual credit programs and courses. It can focus on increasing student interest and ability, on improving high school campuses' activities to increase student interest and support student efforts, and on improving LEAs' support for student and campus efforts. It is suggested that the legislature support the identification and dissemination of promising practices in each of the three areas, and possibly incentivizing implementation of these practices as well. Promising practices worthy of consideration for support in the three areas include the following:

1. Increasing student interest and ability
  - Increasing the proportion of Grade 11 and 12 students who meet or exceed the academic performance standards of the Texas Success Initiative
  - Increasing the knowledge of dual credit value and options, enrollment procedures and timelines, subsidies, and courses available
2. Improving high school campus activities
  - Increasing student interest in courses and programs for dual credit
  - Disseminating dual credit information and counseling students into appropriate courses and programs
  - Scheduling and arranging the logistics of programs and courses for dual credit
  - Increasing student engagement, persistence, and performance in courses and programs for dual credit delivered on campus, online (through LEA-based online programs or the Texas Virtual School Network), and at other locations



### 3. Improving LEA support

- Matching the supply of and demand for courses and programs for dual credit through articulation agreements and LEA dual credit offerings
- Developing strong articulation agreements
- Developing long-term partnerships with LEAs seeking dual credit courses and programs for their students, and with providers of dual credit courses and programs
- Subsidizing student costs of enrollment and participation in courses for dual credit

The current financial condition and circumstances of public education in Texas increase the likelihood that existing funding mechanisms for courses and programs for dual credit will lead to supply outpacing demand. As LEAs face budget shortfalls, the use of state funds (such as the Foundation School Program, High School Allotment, and State Compensatory Education funds) previously used to support the delivery of courses for dual credit may be diverted to pay for core education services. The state should assess thoroughly the ability of LEAs to continue providing adequate financial support for courses and programs for dual credit during the next two school years, and address issues identified by the assessment.

### 3. How can the state ensure efficient use of its resources regarding dual credit programs and courses?

This is a question about two kinds of efficiencies: the efficient alignment of the state's supply of high-quality courses and programs for dual credit and its high school students' demand for and access to the courses and programs, and the reduction of delivery and participation costs without reducing effectiveness. The above recommendations responding to research subquestions 1 and 2 will contribute to improvements in efficiency of both kinds. The evaluation team also suggests that the legislature consider the following strategies for increasing both kinds of efficiency:

- Alignment of supply and demand
  - Leveraging and focusing courses and programs for dual credit by aligning dual credit more closely to the state's education reform, especially in the areas of secondary and postsecondary education
  - Increasing the knowledge providers of transferable courses and programs for dual credit have of the demand for the courses and programs by students and their parents and guardians, their high schools, and their LEAs at the state, regional, municipal, and individual levels
  - Increasing the knowledge students, their parents and guardians, their high schools, and their LEAs have of the supply of transferable courses and programs for dual credit and of dual credit providers at the state, regional, municipal, and individual levels
  - Monitoring supply-side performance – how effectively and efficiently courses and programs for dual credit are provided – against criteria established by the state, and making public the results

- Monitoring demand-side performance – how effectively students perform in courses and programs for dual credit and how effectively and efficiently high schools and LEAs support students’ enrollment and participation in the courses and programs – against criteria established by the state, and making public the results
- Reducing costs without reducing effectiveness through:
  - Incentivizing IHEs, LEAs, and other dual credit course providers, where appropriate, to meet minimum instructor/student ratios for courses enrolling students for dual credit<sup>33</sup>
  - Incentivizing IHEs, LEAs, and other dual credit course providers to meet minimum instruction cost/administration cost ratios for courses and programs enrolling students for dual credit
  - Incentivizing strategies to reduce the cost for students and their parents or guardians of enrolling and participating in a course for dual credit, such as book recycling programs, bulk purchases of books, carpooling, and discount gas coupons

This study relied extensively on existing data about the courses and programs for dual credit delivery, their providers and participants, and their costs and framing policies from TEA and THECB. Their support for this study is an example of their close and productive relationship in developing, operating, and using the results of their complementary data systems to gain a better understanding of courses and programs for dual credit. The continued successful development and expansion of the courses and programs for dual credit as well as increases in effectiveness and efficiency through the above recommendations or otherwise will require more extensive, robust, and systematic data collection and analysis against performance metrics, and reporting and application of findings from the analysis. A final recommendation is for the legislature to support the further development, analysis, and use of such data.

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<sup>33</sup> The incentive model may need to differ based on the demographics, size, and location of the LEA.

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## Appendix A

# Research Study of Texas Dual Credit Programs and Courses Higher Education Administrator Telephone Survey

### Introduction

Hello, I'm \_\_\_\_\_ from American Institutes for Research. We are an organization that conducts educational research and evaluation. We have been selected by the Texas Education Agency to conduct a research study of dual credit programs and courses in Texas. The Texas Education Agency is working in collaboration with the Texas Higher Education Coordinating Board on this project.

The purpose of this telephone survey is to obtain information on the availability and types of dual credit courses that are being offered by your higher education institution; the delivery mechanisms for these courses; and information and supports, such as advising and financial assistance, that are provided to high school students who are enrolled in these courses or who may want to consider enrolling.

Findings and recommendations from this study will be provided in a report to the Texas Education Agency and the Texas Legislature. Your responses to the survey are very important in helping State legislators determine how to promote high school students' access to quality dual credit courses and to ensure that *all* students have the opportunity to earn 12 college credits before graduating from high school.

Your responses to the survey are confidential to the extent permitted by law. In our reporting of findings, you will not be identified by name, position, or institution. Survey data will be reported in the aggregate only; the study focus is on identifying patterns in dual credit offerings and supports throughout Texas.

Thank you for agreeing to participate in this telephone survey. The survey should take approximately 30 minutes. Your participation in this telephone survey is voluntary and you can choose not to participate or can decline to answer specific questions without consequences for your relationship with the Texas Education Agency, the Texas Higher Education Coordinating Board, or the Texas Legislature.

Before we begin, do you have any questions about the study or our procedures for ensuring the confidentiality of survey responses? [RESEARCHER: Allow time for the respondent to ask questions and to provide responses.]

I will be recording your responses as we talk and would also like to tape-record our conversation to ensure accuracy. May I have your permission to tape this conversation?

Respondent permission given for taping:  Yes  No

RESEARCHER: **[IF YES]**, TURN ON VOICE RECORDER AND PROCEED.] I am here with [respondent name], a [position type] at [organization], and today is [date]. “Do I have your permission to record this telephone survey?”

**[IF NO]**, note the respondent’s name, position, organization, and date of the survey and record the respondents’ survey responses.

---

**1. Is your institution of higher education a community/technical college or university?**

- Community college or Technical college
- University

**2. In the fall of 2009, did your college/university offer dual credit courses?**

- Yes
- No

**3. Who is responsible for designing dual credit courses at your college/university?**

*(Select all that apply.)*

- Regular full-time faculty members
- Part-time/adjunct faculty members
- High school teachers instructing dual credit courses
- Other school district personnel
- Other (please explain): \_\_\_\_\_

**4. Which of the following does your school do to ensure that the dual credit courses it offers provide advanced academic instruction beyond, or in greater depth than, the Texas Essential Knowledge and Skills (TEKS)? *(Select all that apply.)***

- Align the curriculum with the TEKS
- Work with the school district(s) to align the courses with the TEKS
- Work with the TEA to align the courses with the TEKS
- Other (please explain): \_\_\_\_\_

**5. Does the college/university representative responsible for advising students about dual credit courses receive any specialized training about the dual credit courses?**

- Yes
- No

**Please explain:**

**5a. In the fall of 2009, who was primarily responsible for advising the high school students who take dual credit courses at your college/university? (*Select one.*)**

- College/university staff
- College/university faculty
- Dual credit program director/coordinator
- Dean's office
- Other (please explain): \_\_\_\_\_
- No one at your college/university had this responsibility

**6. Does your college/university provide an orientation/informational session for high school students who are interested in taking dual credit courses?**

- Yes (please explain): \_\_\_\_\_
- No

**7. Do high school students have to meet any of the requirements listed below before enrolling in dual credit courses?**

- Grade level
- Age
- Minimum GPA
- Minimum number of high school hours/credits completed
- Minimum score on standardized tests
- Maximum course load
- Prerequisite courses
- Disciplinary status
- High school approval
- Teacher recommendation
- Meet standard admissions requirements
- Other (please explain): \_\_\_\_\_
- There are no admission requirements for dual credit courses

**8. Do the high school students who take dual credit courses have the same attendance requirements as college/university students?**

- Yes
- No

**Please explain:**

**9. Does your college/university offer a sequence of dual credit courses, where one dual credit course is a prerequisite for another?**

- Yes
- No

**10. What limitations, if any, do you place on the number of dual credit courses high school students are allowed to attempt?**

**Comments:**

**11. In which of the following subject areas were dual credit courses offered to high school students these subject areas in the fall of 2009?**

- English
- Mathematics
- Computer science
- Science
- Social studies/history
- Fine arts
- Foreign languages
- Career technology
- Other (please explain): \_\_\_\_\_

**12. In the fall of 2009, were any dual credit courses offered only to high school students by your college/university? [If yes, what types of dual credit courses are offered only to high school students?]**

- Yes
- No

**Comments:**

**13. Which of the following factors affect high school students' tuition rate or awarding of scholarships? (Select all that apply.)**

- Financial need
- Merit
- In-district vs. out-of-district
- High school attended
- Enrolled in more than one dual credit course during the semester
- All students are charged the same tuition rate
- Other (please explain): \_\_\_\_\_

**14. Do your faculty members receive any benefits for teaching dual credit courses?**

- Yes
- No

**Please explain:**

**15. In your opinion, when comparing dual credit courses delivered by your college/university to one other:**

- Dual credit courses are consistently rigorous across courses
- There is a small degree of difference in the level of rigor among dual credit courses
- There is a large degree of difference in the level of rigor among dual credit courses

**16. In your opinion, dual credit courses taught on your college/university campus are**

- Less rigorous than dual credit courses taught on a high school campus
- More rigorous than dual credit courses taught on a high school campus
- Equally as rigorous as dual credit courses taught on a high school campus

**17. Has your institution adopted policies designed to address dual credit course quality (in addition to those required by the Texas Higher Education Coordinating Board)?**

- Yes
- No

**Please explain:**

**18. Does your college/university give any preference to freshmen students who have previously completed dual credit, Advanced Placement (AP), or International Baccalaureate (IB) courses?**

- Dual credit courses
- Advancement Placement (AP) courses
- International Baccalaureate (IB) courses
- Your college/university has no preference among these three types of college credit courses

**19. In your opinion, what were some of the factors that supported the effective implementation and delivery of dual credit courses offered by your college/university?**

**Comments:**

**19a. How are the quality and rigor of dual credit courses in your college ensured?**

**Comments:**

**19b. In your opinion, what were some of the challenges that limited the number of dual credit courses your college/university offered in the fall of 2009?**

**Comments:**

*That is the end of the survey. Thank you for your time.*

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## Appendix B

# Research Study of Texas Dual Credit Programs and Courses District (LEA) Administrator Telephone Survey

### Introduction

Hello, I'm \_\_\_\_\_ from American Institutes for Research. We are an organization that conducts educational research and evaluation. We have been selected by the Texas Education Agency to conduct a research study of dual credit programs and courses in Texas.

The purpose of this telephone survey is to obtain information on the availability and types of dual credit courses that are being offered by your school district; the delivery mechanisms for these courses; and information and supports, such as advising and financial assistance, that are provided to high school students who are enrolled in these courses or who may want to consider enrolling.

Findings and recommendations from this study will be provided in a report to the Texas Education Agency and the Texas State Legislature. Your responses to the survey are very important in helping State legislators determine how to promote high school students' access to quality dual credit courses and to ensure that *all* students have the opportunity to earn 12 college credits before graduating from high school.

Your responses to the survey are confidential to the extent permitted by law. In our reporting of findings, you will not be identified by name, position, or institution. Survey data will be reported in the aggregate only; the study focus is on identifying patterns in dual credit offerings and supports throughout Texas.

Thank you for agreeing to participate in this telephone survey. The survey should take approximately 30 to 45 minutes. Your participation in this telephone survey is voluntary and you can choose not to participate or can decline to answer specific questions without consequences for your relationship with the Texas Education Agency or the Texas State Legislature.

Before we begin, do you have any questions about the study or our procedures for ensuring the confidentiality of survey responses? [RESEARCHER: Allow time for the respondent to ask questions and to provide responses.]

I will be recording your responses as we talk and would also like to tape-record our conversation to ensure accuracy. May I have your permission to tape this conversation?

Respondent permission given for taping:  Yes  No

RESEARCHER: **[IF YES]**, TURN ON VOICE RECORDER AND PROCEED.] I am here with [respondent name], a [position type] at [organization], and today is [date]. “Do I have your permission to record this telephone survey?”

**[IF NO]**, note the respondent’s name, position, organization, and date of the survey and record the respondents’ survey responses.

---

## SECTION A. General Information

**1. During the 2009-2010 academic year what was the total number of articulation agreements your school district made with colleges/universities to offer dual credit courses?**

**Comments:**

**2. During the 2009-2010 academic year, in which areas did you offer dual credit courses to students in your school district (Include the courses offered, even if no students enrolled in specific courses.)**

- English
- Mathematics
- Computer science
- Science
- Social sciences/history
- Fine arts
- Foreign languages
- Career/technical

**2a. Were courses in any other subject areas offered? *If yes, please explain.***

Yes

No

**Please explain:**

**3. How are the quality and rigor of dual credit courses in your district ensured?**

**Comments:**

## **SECTION B. Dual Credit Faculty Information**

**4. Do faculty members in your school district teach dual credit courses?**

Yes

No

**5. Do faculty members in your school district receive additional benefits for teaching dual credit courses?**

Yes

No

**6. What additional benefit(s) do faculty members in your school district receive for teaching dual credit courses? *(Select all that apply.)***

- Augmented base salary
- Teaching stipend
- Bonus
- Release time
- Reimbursement for expenses
- Other benefits (please explain): \_\_\_\_\_

**7. Who is primarily responsible for paying the additional benefits received by faculty members in your school district who instruct dual credit courses?**

- Your school district
- Your higher education partner
- Another third party (please explain): \_\_\_\_\_

**8. If more dual credit courses were offered to the students in your school district, would your school district be able to reduce the number of teachers it currently employs?**

- Yes
- No

**9. Does the school district publicize the availability of dual credit courses to all students?**

- Yes
- No

**10. During the 2009-2010 academic year, did your school district provide any specialized training related to dual credit choices and programs for school district personnel?**

- Yes
- No

**11. During the 2009-2010 academic year, did your school district pay for district personnel to attend any specialized training about dual credit choices and programs outside of the school district?**

- Yes  
 No

### **SECTION C. Cost Information**

**12. Are there costs beyond tuition, textbooks, transportation, instructional costs, and faculty benefits associated with offering dual credit courses to students in your school district?**

- Yes  
 No

**Please explain:**

**13. Does your accounting system chart of accounts have an expenditure code (i.e., sub-object code) that tracks dual credit program expenditures?**

- Yes  
 No

*That is the end of the survey. Thank you for your time.*

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## Appendix C

# Research Study of Texas Dual Credit Programs and Courses High School Administrator Telephone Survey

### Introduction

Hello, I'm \_\_\_\_\_ from American Institutes for Research. We are an organization that conducts educational research and evaluation. We have been selected by the Texas Education Agency to conduct a research study of dual credit programs and courses in Texas.

The purpose of this telephone survey is to obtain information on the availability and types of dual credit courses that are being offered by your high school; the delivery mechanisms for these courses; and information and supports, such as advising and financial assistance, that are provided to high school students who are enrolled in these courses or who may want to consider enrolling.

Findings and recommendations from this study will be provided in a report to the Texas Education Agency and the Texas Legislature. Your responses to the survey are very important in helping State legislators determine how to promote high school students' access to quality dual credit courses and to ensure that *all* students have the opportunity to earn 12 college credits before graduating from high school.

Your responses to the survey are confidential to the extent permitted by law. In our reporting of findings, you will not be identified by name, position, or institution. Survey data will be reported in the aggregate only; the study focus is on identifying patterns in dual credit offerings and supports throughout Texas.

Thank you for agreeing to participate in this telephone survey. The survey should take approximately 30 to 45 minutes. Your participation in this telephone survey is voluntary and you can choose not to participate or can decline to answer specific questions without consequences for your relationship with the Texas Education Agency or the Texas Legislature.

Before we begin, do you have any questions about the study or our procedures for ensuring the confidentiality of survey responses? [RESEARCHER: Allow time for the respondent to ask questions and to provide responses.]

I will be recording your responses as we talk and would also like to tape-record our conversation to ensure accuracy. May I have your permission to tape this conversation?

Respondent permission given for taping:  Yes  No

RESEARCHER: **[IF YES]**, TURN ON VOICE RECORDER AND PROCEED.] I am here with [respondent name], a [position type] at [organization], and today is [date]. “Do I have your permission to record this telephone survey?”

**[IF NO]**, note the respondent’s name, position, organization, and date of the survey and record the respondents’ survey responses.

---

## SECTION A. General Information

### 1. Does your school offer dual credit courses?

- Yes  
 No

### 2. How does your school/district identify which dual credit courses to offer?

*(Select all that apply.)*

- My higher education partner makes suggestions for potential dual credit courses  
 My school/district administrators make suggestions for potential dual credit courses  
 My high school faculty makes suggestions for potential dual credit courses  
 Students/families make suggestions for potential dual credit courses  
 The specialization of our higher education partner determines dual credit offerings  
 The interests of the students determine dual credit offerings  
 The transferability of the courses determines dual credit offerings  
 Other (please explain): \_\_\_\_\_

### 3. Did dual credit students take classes with college students and high school students together, or just other high school students?

- College students and high school students together  
 Just other high school students

### 4. Were dual credit courses taught by high school faculty or college faculty?

- High school faculty  
 College faculty

**5. During the 2009-10 academic year, did students from your campus enroll in dual credit courses at any of the following:**

- At a community college
- At a four-year college or university
- At your high school
- At another high school
- Via distance learning. If yes, what type?
- Asynchronous (e.g. recorded video, on demand streaming)
- Synchronous (e.g. videoconferencing, web conferencing, live streaming)

**6. In your opinion, which type of dual credit courses offer a higher quality experience?**

- Courses delivered through face-to-face instruction
- Courses delivered through distance instruction
- The quality of the two is comparable
- I don't know

**7. Which of the following classifications of dual credit courses are offered to your students?**

- English language arts
- Mathematics
- Computer science
- Science
- Social studies/history
- Fine arts
- Foreign languages
- Career/technical

**8. Are other classifications of dual credit courses, beyond those listed in the previous question, offered to your students?**

- Yes
- No

**Please explain:**

**9. Are dual credit courses offered individually or as part of a sequence?**

- Individually
- As part of a sequence

9a. [If offered as part of a sequence] Please provide an example of when a dual credit course is offered as part of a sequence.

Comments:

10. Please select which requirements, if any, your students must meet prior to enrolling in dual credit courses in the following categories.

- Grade level (e.g., 11th or 12th grade status)
- Minimum age
- Minimum GPA
- Minimum number of high school credits completed
- Minimum score on standardized test(s)
- Prerequisite courses
- Disciplinary status
- High school approval
- Higher education partner approval
- Teacher recommendation
- Interview(s)
- Other
- There are no particular requirements.

11. How many total dual credit courses are students allowed to enroll in each semester/year?

- Total number of courses per semester
- Total number of courses per year

## SECTION B. Dual Credit Counseling

12. Which students have the option to receive counseling regarding dual credit choices and programs?

*(Select all that apply.)*

- All students (if yes, no need to ask other options)
- Specific groups (please explain): \_\_\_\_\_
- Other (please explain): \_\_\_\_\_
- No counseling is offered

**13. At your school, who has primary responsibility for providing counseling regarding dual credit choices and programs to your students?**

- Counselor(s)
- Teacher(s)
- Assistant principal(s)
- Other (please explain): \_\_\_\_\_

**14. Have the staff members responsible for providing counseling about dual credit choices and programs received any specialized training about the dual credit choices and programs?**

- Yes
- No

**15. Was the specialized training required?**

- Yes
- No

**16. During the 2009-2010 academic year, which of the following groups received specialized training about dual credit choices and programs. *(Select all that apply.)***

- Administrators
- Counselors
- Teachers
- Students
- Parents / Families
- Other (please explain): \_\_\_\_\_

## **SECTION C. Dual Credit Course Quality**

**17. What measures does your school/district take to ensure that dual credit courses provide advanced academic instruction beyond, or in greater depth than, the Texas Essential Knowledge and Skills (TEKS)?**

- Relies on the higher education partner
- Works with the higher education partner
- Works independently
- Other (please explain): \_\_\_\_\_
- My school/district makes no special effort

**18. How/in what other ways, are the quality and rigor of dual credit courses in your school ensured?**

**Comments:**

**19. In order to assess the effectiveness of dual credit courses, we need information about other programs your school offers its students. The following section asks questions about programs and practices commonly found in Texas high schools that are designed to assist students in completing high school and enrolling in college.**

**To what extent are these programs/practices used in your school?**

	Not at all	Occasionally	Widely
a. Dual credit courses			
b. AP classes			
c. IB programs			

**19a. How effective are these programs/practices in helping students enroll in college?**

	Very ineffective	Ineffective	Effective	Very effective
a. Dual credit courses				
b. AP classes				
c. IB programs				

**20. In your opinion, Advanced Placement courses typically are: (Ask even if AP Courses aren't offered)**

- Less rigorous than dual credit courses
- More rigorous than dual credit courses
- Equally as rigorous as dual credit courses
- I don't know

**21. In your opinion, International Baccalaureate courses typically are: (Ask even if IB Courses aren't offered)**

- Less rigorous than dual credit courses
- More rigorous than dual credit courses
- Equally as rigorous as dual credit courses
- I don't know

**22. In your opinion, when dual credit courses are compared to each other.**

- Dual credit courses are consistently rigorous across courses
- There is a small degree of difference in the level of rigor among dual credit courses
- There is a large degree of difference in the level of rigor among dual credit courses
- I don't know

**23. Does your district give additional weight for the following types of college credit courses in the calculation of grade point averages (GPAs)?**

	Yes	No	Courses not offered
a. Dual credit (career and technical education)			
b. Dual credit (all other)			
c. Advanced Placement (AP)			
d. International Baccalaureate (IB)			

## SECTION D. Dual Credit Course Costs

**24. Is tuition waived for all students who are enrolled in dual credit courses?**

- Yes
- No

**24a. Who is primarily responsible for paying tuition for students who are enrolled in dual credit courses?**

- Students/families
- Your school district
- Your higher education partner
- Another third party (please explain): \_\_\_\_\_

**24b. What entity subsidizes tuition for students who are enrolled in dual credit courses? *(Select all that apply.)***

- No entity subsidizes tuition
- Your school district
- Your higher education partner
- Another third party (please explain): \_\_\_\_\_

**24c. Which of the following factors affect high school students' tuition rate or awarding of scholarships? *(Select all that apply.)***

- Financial need
- Merit
- In-district vs. out-of-district
- High school attended
- Enrolled in more than one dual credit course during the semester
- All students are charged the same tuition rate
- Other (please explain): \_\_\_\_\_

**25. Who is primarily responsible for purchasing textbooks for students who are enrolled in dual credit courses?**

- Students/families
- Your school district
- Your higher education partner
- Another third party (please explain): \_\_\_\_\_

**26. Is transportation provided for students who are enrolled in dual credit courses that meet at a location other than your high school campus?**

- Yes
- No

**26a. What limitations are put on the provision of transportation for students who are enrolled in dual credit courses that meet at a location other than your high school campus? *(Select all that apply.)***

- No limitations are put on transportation
- The location other than your high school campus must be within a reasonable commuting distance
- The location other than your high school campus must be sufficiently far away to warrant the provision of transportation
- A minimum number of students must enroll in dual credit courses that meet at the location other than your high school campus
- The courses must take place on certain days
- The courses must be scheduled at certain times of the day
- Other (please explain): \_\_\_\_\_

**26b. Who is primarily responsible for paying the transportation costs for students who are enrolled in dual credit courses that meet at a location other than your high school campus? *(Select all that apply.)***

- Students/families
- Your school district
- Your higher education partner
- Another third party (please explain): \_\_\_\_\_

**27. Who is primarily responsible for paying the instructional costs, excluding personnel costs, (e.g., equipment, materials, etc.) associated with providing dual credit courses? *(Select all that apply.)***

- Students/families
- Your school district
- Your higher education partner
- Another third party (please explain): \_\_\_\_\_

*That is the end of the survey. Thank you for your time.*

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## Appendix D

### College Supplemental Financial Data Request Workbook Instructions

This data is being requested as part of a voluntary study of dual credit programs in Texas as requested by the Texas Legislature. The primary purpose of this data collection effort is to understand the costs associated with dual credit programs. A **dual credit** course is a course for which at least three high school students attempted high school course credit and college course credit.

This data request workbook has **three tabs** with fields for you to complete.

For technical assistance in filling out this workbook, please contact Elissa Yeates at Gibson Consulting Group, Inc. by email (eyeates@gibsonconsult.com) or by phone (512-328-0884 extension 112).

#### **Tab 1 – Course Information**

Complete columns B – M for **each** dual credit course offered **on your college campus** during the **fall 2009, spring 2010, and/or summer 2010** sessions. Do not provide information for courses held on high school campuses, even if they were taught by your faculty members. For the purposes of this worksheet, a course should be listed again for each delivery method by which it is taught on your campus (Column C).

**Column B:** List the names of all **dual credit courses**, by **college course ID** (e.g., Econ 2301), offered on your campus during the fall 2009 – summer 2010 period in which **at least three** dual credit students were enrolled (**do not report courses in which less than three high school students attempted dual credit**).

**Column C:** Choose, from the drop-down menu, the **delivery method** for the course. There are two delivery method options: *Classroom* and *Online*. If a course had both classroom and online course sections available to dual credit students between fall 2009 and summer 2010, add another row for that course. Fill in one row with information about the online course and the other row with information about the classroom course.

**Column D:** Provide the number of **course credit hours** a student receives from your college for completing the course.

**Column E:** Provide the **total number of students enrolled in the course** for all three semesters – fall 2009, spring 2010, and summer 2010 – for which the course was offered. Include all students enrolled in the course. This includes college students enrolled in the course who were not receiving dual high school credit for the course as well as high school students enrolled in the course who were receiving dual credit.

**Column F:** Provide the **total number of high school students enrolled in the course for dual credit** for the fall 2009, spring 2010, and summer 2010 semesters combined. **Dual credit students** are high school

students seeking dual credit on your college campus. This total should *exclude* college students enrolled in the course who did not receive high school credit for the course.

**Column G:** Provide the **total number of dual credit course sections** of this course taught by **contracted, or adjunct**, instructors on your campus during the fall 2009-summer 2010 period. Do not include sections taught by **salaried employees** of your college. **Dual credit course sections** are course sections offered to high school students seeking dual credit on your college campus.

**Column H:** Provide the **total number of dual credit course sections** of this course taught by **salaried** instructors on your campus during the fall 2009-summer 2010 period. Do not include sections taught by **contracted or adjunct instructors**. **Dual credit course sections** are course sections offered to high school students seeking dual credit on your college campus.

**Column I:** Provide the **total number of salaried instructors** (e.g., professor, associate professor, etc.) **teaching dual credit sections of this course** to dual credit students on your campus during the fall 2009 – summer 2010 period. **Dual credit students** are high school students seeking dual credit on your college campus. **Dual credit course sections** are course sections offered to high school students seeking dual credit on your college campus.

**Column J:** This column intends to capture the **amount of instructor time needed to teach an online course section** as a percentage of the instructor time required to teach the same course in a classroom setting. Estimate the amount of total instructor time needed to teach an online section of a course (including preparation, grading, etc.) as a percentage of the total instructor time needed to teach a classroom section of the course. For example, if professors need ten hours a week to teach a classroom section of a course, and eight hours a week to teach the online section, then the amount of time needed to teach the online section would be 80% of the total time needed to teach the classroom section. This column should only include percentages, not hours. **Only fill this column out for courses taught online.** For classroom sections of a course, this column is not applicable.

**Column K:** Provide the **total cost to each student for required textbooks** and other required books for this course. For example, if a course required each student to have a textbook which cost \$80, a novel which cost \$10, and a course packet which cost \$30, the total cost of the required books would be \$120. Assume the course books were purchased new.

**Column L:** Provide the **total amount of other course-related fees charged to each student** for the course, including any fees for materials, lab equipment, and software which must be paid per student enrolled.

**Column M:** Provide the **average total amount of supplemental pay per dual credit course section paid to salaried instructors** who teach this dual credit course, if any. For example, the average stipend a salaried instructor at your college may receive for teaching a dual credit course section may be \$500 per section. **Dual credit course sections** are course sections offered to high school students seeking dual credit on your college campus.

**Fill in all 12 columns for each course offered on your college campus to dual credit students for the fall 2009, spring 2010, and summer 2010 sessions. For courses offered both online and in the classroom, fill in two rows for that course.**

***Tab 2 – Expenditures***

The information requested in Tab 2 pertains to expenditures related to your dual credit program for the fall 2009 – summer 2010 period. Complete all empty cells with the requested expenditure information related to your college’s dual credit program. Much of the information can be obtained from your college district business officer. If your district does not track one of the expenditures below, estimate the amount.

***Expenditure (Average)***

**Cell B4:** Provide the **average annual amount paid**, per course section taught, to instructors contracted by the college to teach courses for the fall 2009 – summer 2010 period. This amount should include all amounts paid to contracted professors, including but not limited to base pay. Include **only professors contracted on a course-by-course basis to teach**, not professors employed by the college who received a salary.

**Cell B5:** Provide the **average amount of supplemental pay** (e.g., stipend) per dual credit course section taught your college paid to salaried instructors who taught dual credit course sections **at high school campuses** during the fall 2009 through summer 2010 period, if any. For example, if your college pays staff instructors a stipend of \$500 per course to travel to area high schools to teach dual credit courses, that amount would be entered in this cell.

**Cell B6:** Provide the **average annual salary** paid per FTE dedicated to dual credit program administration during the 2009-10 academic year at your college, if applicable. For example, the annual salary of a college district dual credit administrator would be included in this average.

***Expenditure (Total)***

**Cell B8:** Provide the **total amount paid**, if any, to high school teaching staff members for providing dual credit course instruction at your campus during the fall 2009 through summer 2010 period.

**Cell B9:** Provide the **total amount of tuition** paid, if any, by your college to school districts for dual credit course participation. This would include any **tuition** reimbursements given by your college to school districts for dual credit programs.

**Cell B10:** Provide the **total amount of fees** paid, if any, by your college to school districts for dual credit course participation. This would include any fees paid to the district as a result of your articulation agreement.

### ***Other Program Cost Information***

**Cell B12:** Provide the **average number of total course sections** each faculty member taught over the fall 2009 – summer 2010 period. This includes dual credit courses and non-dual credit courses taught.

**Cell B13:** Provide the **total number of staff FTEs** employed by the college who were dedicated to dual credit program administration in the 2009-10 academic year, if applicable.

**Cell B14:** Provide **average annual employee benefits** (i.e., payroll burden) as a **percentage** of salary for instructors in your college. For example, employee benefits may account for 28% of employee salaries on average. Do not include contracted instructors (e.g., adjunct, lecturer, etc.) in this average.

### ***Tab 3 – Revenues***

The information requested in Tab 3 pertains to college revenues generated by your dual credit program during the fall 2009 – summer 2010 period. Complete cells B4-B10 with the requested revenue information, and cell A12, if applicable. Cells B4-B10 request total amounts received in each category for the fall 2009 – summer 2010 period. Much of the information can be obtained from your college's business officer. If your college does not track one of the revenues below, estimate the amount.

**Cell B4:** Provide the total amount of **all tuition payments** received directly from **dual credit students** for dual credit course participation during the fall 2009 -summer 2010 period.

**Cell B5:** Provide the total amount of **all fee payments** received directly from **dual credit students** for dual credit course participation during the fall 2009-summer 2010 period.

**Cell B6:** Provide the total amount of **all student tuition payments** received directly from **school districts** for dual credit course participation during the fall 2009-summer 2010 period.

**Cell B7:** Provide the total amount of **all student fee payments** received directly from **school districts** for dual credit course participation during the fall 2009-summer 2010 period.

**Cell B8:** Provide the total amount of all **federal funds** used to support your dual credit program during the fall 2009-summer 2010 period.

**Cell B9:** Provide the total amount of all **state funds** used to support your dual credit program during the fall 2009-summer 2010 period.

**Cell B10:** Provide the total amount of all **local funds** used to support your dual credit program during the fall 2009-summer 2010 period.

**Cell B11:** Provide the total amount of all **other funds** used to support your dual credit program during the fall 2009-summer 2010 period.

**Cell A12:** If the amount entered into cell B10 was more than \$0, specify **the source of other funds** used to support your dual credit program during the fall 2009-summer 2010 period.

## Appendix E

### School District Supplemental Financial Data Request Workbook Instructions

These data are being requested as part of a voluntary study of dual credit programs in Texas as requested by the Texas Legislature. The primary purpose of this data collection effort is to understand the costs associated with dual credit programs. A **dual credit** course is a course for which a high school student receives high school course credit and college course credit.

This data request workbook has **two tabs** with fields for you to complete.

For technical assistance in filling out this workbook, please contact Elissa Yeates at Gibson Consulting Group, Inc. by email (eyeates@gibsonconsult.com) or by phone (512-328-0884 extension 112).

When both sheets of the workbook are completed, please return the Excel file to contact Elissa Yeates at Gibson Consulting Group, Inc. by email (eyeates@gibsonconsult.com) **no later than February 04, 2011.**

#### ***Tab 1 – Expenditures***

The information requested in Tab 1 pertains to expenditures incurred by your district for the dual credit program from fall 2009 through summer 2010. Please complete all empty cells, as described below. Much of the information can be obtained from your district business officer. If your district does not track one of the expenditures below, estimate the amount.

#### ***Program Costs***

**Cell B4:** Provide the **total number of students enrolled in dual credit courses on campuses** district-wide from fall 2009 through summer 2010. Only include students served on high school campuses in your district. Exclude students who traveled to a college campus for dual credit courses.

**Cell B5:** Provide the **average annual employee benefits** (i.e., payroll burden) as a percentage of salary for teaching staff in your school district during the 2010 fiscal year. For example, employee benefits may account for 28% of employee salaries on average.

**Cell B6:** Provide the **total number of students** receiving district transportation services for dual credit courses from fall 2009 through summer 2010. This would include students bused from a district high school to a community college for a dual credit class. Do not include students other than those transported to attend dual credit courses.

**Cell B7:** Provide the **average miles per student, per week**, of transport for those students receiving district transportation **for dual credit classes** from fall 2009 through summer 2010. For example, dual credit students district-wide might be bused to a community college an average of 15 miles per week.

**Cell B8:** Provide the **total number of staff FTEs** employed by the district who were dedicated to dual credit program administration during the 2010 fiscal year, if applicable (for example, a district dual credit coordinator).

### ***Average Expenditures***

**Cell B10:** Provide the **average annual stipend per dual credit course** taught that high school teaching staff members in your district received, if any, for teaching dual credit courses during the 2010 fiscal year. If your district does not provide teaching staff members with a supplemental stipend for teaching dual credit courses, enter 0.

**Cell B11:** Provide the **average annual salary** paid per FTE dedicated to dual credit program administration during the 2010 fiscal year in your district, if applicable. For example, the annual salary of a district dual credit administrator would be included in this average.

### ***Total Expenditures***

**Cell B13:** Provide the **total amount paid** by the district for dual credit course textbooks during the 2010 fiscal year. Include total dual credit course textbook expenditures for courses taught at district high schools and those taught on community college campuses, if the district purchased textbooks for those courses.

**Cell B14:** Provide the **total tuition amount paid**, if any, by your school district to community college districts for dual credit program participation during the 2010 fiscal year. This total should *exclude* additional fees for the course.

**Cell B15:** Provide the **total fee amount paid**, if any, by your school district to community college districts for dual credit program participation during the 2010 fiscal year. This should *exclude* tuition amounts included in Cell B14.

**Cell B16:** Provide the **total amount paid**, if any, by your school district to contracted professors for teaching dual credit courses on district campuses during the 2010 fiscal year.

### ***Tab 2 – Revenues***

The information requested in Tab 2 pertains to revenues received by your district for the dual credit program during the 2010 fiscal year. Complete cells B4-B12 with the requested revenue information, and cell A14, if applicable. Cells B4-B12 request total amounts received in each category during the 2010 fiscal year. Much of the information can be obtained from your district business officer. If your district does not track one of the revenues below, estimate the amount.

**Cell B4:** Provide the total amount of **all tuition payments** received directly from **dual credit students** for dual credit course participation during the 2010 fiscal year.

**Cell B5:** Provide the total amount of all **textbook fee payments** received directly from **dual credit students** for dual credit course participation during the 2010 fiscal year.

**Cell B6:** Provide the **total amount of all transportation fee payments** received directly from **dual credit students** for dual credit course transportation received during the 2010 fiscal year.

**Cell B7:** Provide the **total amount of all course material and other fee payments** received directly from **dual credit students** for dual credit course participation during the 2010 fiscal year. This total should *exclude* tuition, transportation, and textbook fees (those values recorded in cells B4-B6). For example, if district students pay the district lab equipment or software fees for dual credit courses, the total amounts received from those fees would be included in this total.

**Cell B8:** Provide the total amount of all **tuition payments** received directly from **community college districts** for dual credit course program participation during the 2010 fiscal year, if applicable.

**Cell B9:** Provide the total amount of all **other fee payments** received directly from **community college districts** for dual credit course participation by students in your district during the 2010 fiscal year, if applicable.

**Cell B10:** Provide the total amount of all **federal funds** used to support the dual credit program during the 2010 fiscal year.

**Cell B11:** Provide the total amount of all **state categorical funds** used to support the dual credit program during the 2010 fiscal year.

**Cell B12:** Provide the total amount of all **other state and local funds** used to support the dual credit program 2010 fiscal year. This total should exclude federal and state funds reported in cells B10 and B11.

**Cell A14:** If the amount entered into cell B12 was more than \$0, specify the **source of the other funds** used to support the dual credit program during the 2010 fiscal year.

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## Appendix F

### High School Supplemental Financial Data Request Workbook Instructions

This data is being requested as part of a voluntary study of dual credit programs in Texas as requested by the Texas Legislature. The primary purpose of this data collection effort is to understand the costs associated with dual credit programs. A **dual credit** course is a course for which a high school student received high school course credit and college course credit.

This data request workbook has **two tabs** with fields for you to complete.

For technical assistance in filling out this workbook, please contact Elissa Yeates at Gibson Consulting Group, Inc. by email (eyeates@gibsonconsult.com) or by phone (512-328-0884 extension 112).

#### **Tab 1 – Course Information**

Complete columns B – O for **each** course offered **on your high school campus** during the **fall 2009, spring 2010, and/or summer 2010** sessions. Do not provide information for courses held on a community college campus, even if your students traveled to the community college to receive instruction. For the purposes of this worksheet, a course should be counted as two courses if it was offered online and in a classroom (Column D). For courses offered both online and in a classroom, add another row for that course.

**Column B:** List all **dual credit courses**, by high school course name, offered on your campus during the fall 2009 – summer 2010 period.

**Column C:** List the **college course ID** (e.g., ECON 2301) for all **dual credit courses** listed in Column B.

**Column D:** Choose, from the drop-down menu, the **delivery method** for the course. There are two delivery method options: *High School Classroom* and *Online Offered through High School*. **If a course had both classroom and online course sections available to dual credit students between fall 2009 and summer 2010, add another row for that course.** Fill in one row with information about the online course and the other row with information about the classroom course. Note that this **excludes courses offered on college campuses or online courses offered through a college**. Do not report these courses.

**Column E:** Provide the number of **contact hours per week** a student enrolled in this course receives. Contact hours include only those hours in which the instructor is directly teaching the students. For example, a class meeting for fifty minutes each week would have 250 contact minutes, or 4.2 contact hours, per week.

**Column F:** Provide the number of **course credit hours** a student receives on a college transcript for completing the course (e.g., typically 3 hours for a non-lab class, and 4 hours for a course which includes an additional lab portion).

**Column G:** Provide the total number of **course sections** available to dual credit students on your campus which were **taught by a college professor** for all semesters the course was offered during fall 2009 – summer 2010 period.

**Column H:** Provide the total number of **course sections** available to dual credit students on your campus which were **taught by a high school teacher** for all semesters the course was offered during fall 2009 – summer 2010 period.

**Column I:** Provide the **total number of students enrolled in the course** for all three sessions – fall 2009, spring 2010, and summer 2010 – that the course was offered. **Include** high school students enrolled in the course that are **not** receiving dual credit for the course.

**Column J:** Provide the **total number of non-dual credit seeking students** enrolled in the dual credit course sections (e.g., the number of students enrolled in the course receiving high school credit for the course but **not** college credit).

**Column K:** This column intends to capture the **amount of instructor time needed to teach an online course section** as a percentage of the instructor time required to teach the same course in a classroom setting. Estimate the amount of total instructor time needed to teach an online section of a course (including preparation, grading, etc.) as a **percentage** of the total instructor time needed to teach a classroom section of the course. For example, if teachers need ten hours a week to teach a classroom section of a course, and eight hours a week to teach the online section, then the amount of time needed to teach the online section would be 80% of the total time needed to teach the classroom section. This column should only include percentages, not hours. Only fill this column out for courses taught online. For classroom sections of a course, this column is not applicable.

**Column L:** Provide the **total cost to each student of the required textbooks** and other books for this course. For example, if a course required each student to have a textbook which cost \$80, a novel which cost \$10, and a course packet which cost \$30, the total cost for each student of the required books would be \$120. Assume the course books are purchased new.

**Column M:** Provide the **total amount of other course-related fees** charged to each student for the course, including any fees for materials, lab equipment, and software which must be paid per student enrolled.

**Column N:** Provide the **total supplemental amount** (e.g., stipend in excess of base salary) **paid to each high school teaching staff member** who teaches this course. Include only those stipend amounts the teacher staff member receives as a result of teaching this dual credit course. For example, teachers may receive a stipend of \$1,000 for teaching a dual credit biology course.

**Column O:** Provide the **total contracted fee per section of this dual credit course**. This total should include any amounts paid by the campus to college professors for teaching sections of this course at the high school campus. For example, college professors contracted to teach a dual credit English course on the high school campus may receive a payment of \$1,000 for each section taught.

**Fill in all 14 columns for each course offered on your campus to dual credit students for the fall 2009, spring 2010, and summer 2010 sessions.**

***Tab 2 – Campus Information***

The information requested in Tab 2 pertains to expenditures related to your dual credit program for the fall 2009 – summer 2010 period. Complete cells B4, B5, and B6 with the requested information related to your campus dual credit program.

**Cell B4:** Provide the **total amount paid**, if any, by your campus to contracted professors for teaching dual credit courses during the 2010 fiscal year. Include **only payments to professors contracted on a course-by-course basis to teach**, not payments to teachers employed by the campus who receive a salary.

**Cell B5:** Provide the **total number of high school teachers** who taught one or more dual credit course on your campus.

**Cell B6:** Provide the **average total instructional (contact) hours taught per week** by each teacher on your campus during the 2009-10 academic year. Exclude instructional hours taught during summer 2010 from this average. Include dual credit and non-dual credit course instructional hours in the average. Include only teachers employed by the campus who received a salary. For example, teachers at your campus may teach an average total of 25 instructional hours per week.

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## Appendix G

### Regression of Counts of Enrollment in Courses for Dual Credit on High School Characteristics

A generalized linear model using variable exposure Poisson regression was fit to the school-level data with dual credit enrollment counts as the outcome variable and various school characteristics as the predictor variables. The variable exposure Poisson regression is a typical model used when the outcome of interest is a count and the counts come from populations of different sizes. In this instance, schools with larger student populations are more likely to have higher enrollment in courses for dual credit than small schools with limited potential enrollees. The variable exposure regression uses school size (number of students) to control for these differences; data from the 2009–10 academic year were used for this analysis.

For a variable exposure Poisson regression, the outcome  $Y_i$  (in this case, the count of students enrolled in courses for dual credit in school  $i$ ) follows a Poisson distribution with rate  $\vartheta_i$  and exposure  $u_i$  (number of students in the school).

$$Y_i = \text{Poisson}(u_i \theta_i)$$

where

$$\theta_i = \exp(X_i \beta)$$

with  $X_i \beta$  denoting the matrix algebra representation of the regression equation. In these models,  $\log(u_i)$  is called the offset. In particular, this model includes the offset as a regression predictor with coefficient set to 1 (i.e., no regression coefficient is estimated by the model). This model is analogous to a standard regression model, which includes a variable (in this case, the offset) to account for the different sizes of the schools. The key additional feature is a linking function that accounts for the distribution of the dependent variable (the count of enrollments in courses for dual credit).

The model also accounts for overdispersion in the data (a phenomenon that can happen when data are modeled with an exponential or Poisson distribution) and nonnormality of predictor variables. To account for overdispersion, the data were scaled using the ratio of model deviance to degrees of freedom as an estimate of the dispersion parameter. This process resulted in a fit index that was in the acceptable range. Non-normality of the predictor variables are accounted for using an inverse normal transformation.

Table G1 shows the results of the analysis, including the regression coefficient estimates, standard errors, Chi-square statistics, and significance levels. Of the 1,268 schools included in the extant data, 96 had some level of missing data and were excluded from the analysis. The regression results below are based on 1,172 schools (92% of the total sample).

**Table G1. Parameter Estimates for the Poisson Variable Exposure Regression**

<b>Parameter</b>	<b>DF</b>	<b>Estimate</b>	<b>Standard Error</b>	<b>Chi-Square</b>	<b>Sig.</b>
Intercept	1	-3.6898	0.3136	138.44	0.0001
Percentage of students proficient on TAKS-Reading	1	0.452	0.1555	8.45	0.0036
Percentage of students proficient on TAKS-Math	1	0.0102	0.1261	0.01	0.9358
Percentage of African-American students	1	-0.1626	0.0444	13.42	0.0002
Percentage of Hispanic students	1	0.1071	0.0559	3.67	0.0553
Percentage of LEP students	1	-0.4267	0.0748	32.55	0.0001
Percentage of economically disadvantaged students	1	0.2515	0.0703	12.81	0.0003
Teacher-student ratio	1	-0.0228	0.0124	3.36	0.067
Percentage of gifted and talented students	1	0.2877	0.0816	12.43	0.0004
Rural location of the school	1	-0.3541	0.1301	7.41	0.0065
Percent of students taking AP/IB exams	1	-0.1738	0.0488	12.66	0.0004

*Sources:* 2009–10 data from the Academic Excellence Indicator System, the Public Education Information Management System, and the Texas Assessment of Knowledge and Skills (Texas Education Agency, 2011)

## Appendix H

### Percentage of Courses Taken for Dual Credit by Course Type, Race/Ethnicity, and Year

The tables below provide supplementary data on the percentage of courses taken for dual credit during the 2007–08 and 2008–09 academic years by course type and race/ethnicity. The table summarizing findings from 2009–10 was presented in the text, but is included again so that differences across years can be examined. As noted previously, in 2009–10, African-American (21%) and Hispanic (15%) students took a greater percentage of coursework in career or technical education compared with white (6%) and Asian students (7%). In contrast, white and Asian students took a greater percentage of courses in academic subjects such as social studies/history. In 2009–10, 37% of the courses taken by white students and 33% of those taken by Asian students were in social studies/history compared with 26% of courses taken by African-American students and 25% of courses taken by Hispanic students (see Table H3). With regards to the percentage of courses by course type and race/ethnicity taken in 2007–08 and 2008–09 (see Tables H1 and H2), these same patterns are evident. There are some differences across years, however. For example, the percentage of social studies/history courses taken by African-American students increased from 21% in 2007–08 to 26% in 2009–10. Similarly, the percentage of social studies/history courses taken by Hispanic students increased from 22% in 2007–08 to 25% in 2009–10.

**Table H1. Percentage of Courses for Dual Credit Taken by Course Type  
and Race/Ethnicity, 2007–08**

Course Type	Asian/Pacific Islander	African American	Hispanic	White	Other
Social studies/history	24.3%	20.7%	21.6%	39.1%	37.2%
English language arts	19.3%	18.6%	18.4%	32.4%	32.7%
Career or technical	12.1%	20.6%	15.3%	4.7%	7.4%
Computer science	13.9%	22.1%	16.3%	3.1%	4.0%
Mathematics	11.5%	3.9%	7.1%	10.3%	8.9%
Science	6.4%	3.4%	3.8%	4.0%	2.2%
Foreign language	3.7%	1.8%	4.7%	3.5%	2.9%
Fine arts	1.2%	0.8%	1.2%	0.6%	0.7%
Other	7.5%	8.0%	11.5%	2.3%	4.0%
Total courses taken	10,931	19,169	92,208	114,662	874

*Source:* Public Education Information Management System (Texas Education Agency, 2011)

*Note.* Column percentages may not sum to 100 due to rounding.

**Table H2. Percentage of Courses for Dual Credit Taken by Course Type and Race/Ethnicity, 2008–09**

<b>Course Type</b>	<b>Asian/Pacific Islander</b>	<b>African American</b>	<b>Hispanic</b>	<b>White</b>	<b>Other</b>
Social studies/history	26.8%	20.8%	22.5%	39.6%	31.9%
English language arts	21.5%	19.4%	19.6%	31.4%	31.2%
Career or technical	10.3%	19.1%	15.5%	5.7%	7.3%
Computer science	11.3%	21.9%	16.0%	3.8%	5.8%
Mathematics	10.9%	4.3%	7.5%	9.8%	8.8%
Science	6.7%	3.4%	3.1%	3.4%	3.9%
Foreign language	3.8%	2.1%	4.9%	3.3%	5.0%
Fine arts	1.0%	1.4%	1.9%	0.7%	0.3%
Other	7.8%	7.6%	9.1%	2.4%	5.9%
Total courses taken	12,107	25,023	108,925	127,681	868

Source: Public Education Information Management System (Texas Education Agency, 2011)

Note. Column percentages may not sum to 100 due to rounding,

**Table H3. Percentage of Courses for Dual Credit Taken by Course Type and Race/Ethnicity, 2009–10**

<b>Course Type</b>	<b>Asian/Pacific Islander</b>	<b>African American</b>	<b>Hispanic</b>	<b>White</b>	<b>Other</b>
Social studies/history	33.2%	25.8%	24.9%	38.1%	35.7%
English language arts	28.6%	23.4%	24.0%	33.8%	30.0%
Career or technical	7.4%	20.5%	14.9%	5.6%	7.5%
Computer science	5.1%	13.6%	11.7%	2.9%	4.2%
Mathematics	9.8%	4.2%	7.7%	9.5%	10.6%
Science	5.4%	3.0%	3.8%	4.7%	4.5%
Foreign language	3.0%	1.5%	4.8%	2.3%	2.5%
Fine arts	1.9%	2.0%	2.1%	0.8%	1.7%
Other	5.5%	6.1%	6.2%	2.4%	3.4%
Total courses taken	9,670	19,547	100,992	114,230	4,424

Source: Public Education Information Management System (Texas Education Agency, 2011)

Note. Column percentages may not sum to 100 due to rounding,

## Appendix I

### Percentage of Courses Taken for Dual Credit by Course Type, Limited English Proficiency Status, and Year

The tables below provide supplementary data on the percentage of courses taken for dual credit during the 2007–08 and 2008–09 academic years by course type and LEP status. The table summarizing findings from 2009–10 was presented in the text, but is included again so that differences across years can be examined. As previously noted, in 2009–10, LEP students and students who had exited LEP programs took a greater concentration of coursework in career or technical education and computer science than non-LEP students. For example, 32% of courses taken by LEP students and 23% of those taken by students who had exited LEP programs were in career or technical education compared with 10% of courses taken by non-LEP students. In contrast, non-LEP students took a greater concentration of coursework in core academic subject areas such as social studies/history and English language arts than LEP students or students who had exited LEP programs. For example, 32% of the courses taken by non-LEP students in 2009–10 were in social studies/history compared with 11% of the courses taken by LEP students and 15% of the courses taken by students who had exited LEP programs (see Table I3). In looking at the percentage of courses by course type and LEP status taken in 2007–08 and 2008–09 (see Tables I1 and I2), these patterns are consistent across years.

There are some notable differences, however, in patterns of course-taking across the three years examined. For example, the percentage of social studies/history courses taken by LEP students increased from 1.9% in 2007–08 to 11% in 2009–10. Similarly, the percentage of social studies/history courses taken by students who had exited LEP programs increased from 10% in 2008–09 to 15% in 2009–10. The percentage of English language arts courses taken by LEP students also increased from 1% in 2007–08 to 6% in 2009–10, and the percentage of English language arts courses by students who had exited LEP programs increased from 7% in 2008–09 to 13% in 2009–10. In addition, the percentage of computer science courses taken by LEP students decreased from 42% in 2007–08 to 25% in 2009–10; the percentage of computer science courses taken by students who had exited LEP programs decreased from 35% in 2008–09 to 24% in 2009–10.

**Table I1. Percentage of Courses for Dual Credit Taken by Course Type and Limited English Proficiency Status, 2007–08**

Course Type	LEP	Exited LEP But Monitored	Not LEP
Social studies/history	1.9%	N/A	30.5%
English language arts	1.1%	N/A	25.5%
Career or technical	26.9%	N/A	10.2%
Computer science	41.5%	N/A	9.9%
Mathematics	1.5%	N/A	8.7%
Science	2.5%	N/A	4.0%
Foreign language	4.2%	N/A	3.9%
Fine arts	1.5%	N/A	0.9%
Other	19.0%	N/A	6.4%
Total courses taken	2,850	N/A	234,994

Source: Public Education Information Management System (Texas Education Agency, 2011)

Notes. Column percentages may not sum to 100 due to rounding, Data for students who exited LEP programs but were monitored were not reported in 2007–08.

**Table I2. Percentage of Courses for Dual Credit Taken by Course Type and Limited English Proficiency Status, 2008–09**

Course Type	LEP	Exited LEP But Monitored	Not LEP
Social studies/history	5.3%	9.9%	31.0%
English language arts	3.7%	7.3%	25.6%
Career or technical	26.6%	19.8%	10.7%
Computer science	39.2%	34.7%	10.0%
Mathematics	3.1%	4.9%	8.5%
Science	2.3%	2.3%	3.4%
Foreign language	4.8%	3.4%	3.8%
Fine arts	3.7%	2.7%	1.2%
Other	11.2%	15.1%	5.6%
Total courses taken	3,097	2,789	268,718

Source: Public Education Information Management System (Texas Education Agency, 2011)

Note. Column percentages may not sum to 100 due to rounding,

**Table 13. Percentage of Courses for Dual Credit Taken by Course Type and Limited English Proficiency Status, 2009–10**

<b>Course Type</b>	<b>LEP</b>	<b>Exited LEP But Monitored</b>	<b>Not LEP</b>
Social studies/history	10.8%	15.4%	31.9%
English language arts	6.1%	12.9%	29.1%
Career or technical	32.0%	23.1%	10.4%
Computer science	24.8%	23.8%	7.1%
Mathematics	4.0%	6.3%	8.4%
Science	0.8%	2.1%	4.3%
Foreign language	7.5%	4.2%	3.2%
Fine arts	5.5%	3.1%	1.4%
Other	8.5%	9.2%	4.3%
Total courses taken	2,014	2,648	244,201

*Source:* Public Education Information Management System (Texas Education Agency, 2011)

*Note.* Column percentages may not sum to 100 due to rounding,

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## Appendix J

### **Percentage of Courses Taken for Dual Credit by Course Type, Vocational Education Status, and Year**

The tables below provide supplementary data on the percentage of courses taken for dual credit during the 2007–08 and 2008–09 academic years by course type and vocational education status. The table summarizing findings from 2009–10 was presented in the text but is included again so that differences across years can be examined. As previously noted, vocational education students took a greater concentration of coursework in career or technical education and computer science in 2009–10 than non-vocational education students. For example, percentages ranging from 10% to 17% of courses taken for dual credit by vocational education students were in career or technical education compared with 4% of courses taken by non-vocational education students. In contrast, non-vocational education students took a slightly greater concentration of courses in core academic subjects such as social studies/history and English language arts. For example, 37% of the courses taken by non-vocational education students were in social studies/history compared with percentages ranging from 27% to 32% of courses taken by vocational education students (see Table J3). In looking at the percentage of courses by course type and vocational education status taken in 2007–08 and 2008–09 (see Tables J1 and J2), these patterns are generally consistent across years, although there are some minor variations across years.

**Table J1. Percentage of Courses for Dual Credit Taken  
by Course Type and Vocational Education Status, 2007–08**

<b>Course Type</b>	<b>Career/Tech Coherent Sequence, Grades 9–12</b>	<b>Enrolled in Career/Tech Electives, Grades 6–12</b>	<b>Participates in Tech Prep Program</b>	<b>No Participation</b>
Social studies/history	31.4%	27.3%	25.4%	35.5%
English language arts	27.7%	24.0%	22.0%	27.0%
Career or technical	8.7%	11.7%	16.3%	5.9%
Computer science	11.2%	16.7%	11.4%	3.1%
Mathematics	8.9%	5.9%	8.9%	10.3%
Science	3.4%	4.7%	3.4%	4.3%
Foreign language	3.8%	1.9%	2.9%	6.4%
Fine arts	0.5%	0.7%	0.6%	1.7%
Other	4.3%	7.1%	9.1%	5.9%
Total courses taken	54,099	58,744	56,376	68,625

*Source:* Public Education Information Management System (Texas Education Agency, 2011)

*Notes.* Column percentages may not sum to 100 due to rounding. “Career/Tech Coherent Sequence, Grades 9–12” refers to recommended sequences of career or technical education courses that are offered to high school students, and “Career/Tech Electives, Grades 6–12” refers to elective courses available to students in these grades that are not part of a defined course sequence. “Tech Prep Program” refers to a college-preparatory program that provides students with academic as well as applied technical skills. The high school program prepares students to continue in a college program that leads to a minimum of a two-year postsecondary degree (or apprenticeship license).

**Table J2. Percentage of Courses for Dual Credit Taken  
by Course Type and Vocational Education Status, 2008–09**

<b>Course Type</b>	<b>Career/Tech Coherent Sequence, Grades 9–12</b>	<b>Enrolled in Career/Tech Electives, Grades 6–12</b>	<b>Participates in Tech Prep Program</b>	<b>No Participation</b>
Social studies/history	30.9%	29.5%	25.5%	35.2%
English language arts	26.5%	25.1%	22.2%	26.7%
Career or technical	10.4%	10.3%	17.5%	6.8%
Computer science	13.1%	16.1%	11.0%	3.8%
Mathematics	8.5%	7.0%	8.4%	9.5%
Science	2.7%	4.1%	3.0%	3.6%
Foreign language	3.6%	2.6%	3.1%	5.7%
Fine arts	1.1%	0.8%	0.9%	2.1%
Other	3.2%	4.5%	8.4%	6.6%
<b>Total courses taken</b>	<b>61,612</b>	<b>67,288</b>	<b>66,091</b>	<b>79,613</b>

*Source:* Public Education Information Management System (Texas Education Agency, 2011)

*Notes.* Column percentages may not sum to 100 due to rounding. “Career/Tech Coherent Sequence, Grades 9–12” refers to recommended sequences of career or technical education courses that are offered to high school students, and “Career/Tech Electives, Grades 6–12” refers to elective courses available to students in these grades that are not part of a defined course sequence. “Tech Prep Program” refers to a college-preparatory program that provides students with academic as well as applied technical skills. The high school program prepares students to continue in a college program that leads to a minimum of a two-year postsecondary degree (or apprenticeship license).

**Table J3. Percentage of Courses for Dual Credit Taken  
by Course Type and Vocational Education Status, 2009–10**

<b>Course Type</b>	<b>Career/Tech Coherent Sequence, Grades 9–12</b>	<b>Career/Tech Electives, Grades 6–12</b>	<b>Tech Prep Program</b>	<b>Does Not Participate</b>
Social studies/history	31.0%	31.6%	26.6%	36.9%
English language arts	29.1%	29.1%	24.6%	32.0%
Career or technical	11.8%	10.1%	17.1%	3.9%
Computer science	10.3%	8.9%	8.9%	2.0%
Mathematics	7.9%	7.6%	8.3%	9.5%
Science	3.5%	4.9%	4.1%	4.2%
Foreign language	2.4%	2.1%	3.3%	5.1%
Fine arts	0.8%	1.5%	1.1%	2.4%
Other	3.1%	4.0%	6.0%	4.1%
Total courses taken	58,101	62,048	63,546	65,168

*Source:* Public Education Information Management System (Texas Education Agency, 2011)

*Notes.* Column percentages may not sum to 100 due to rounding. “Career/Tech Coherent Sequence, Grades 9–12” refers to recommended sequences of career or technical education courses that are offered to high school students, and “Career/Tech Electives, Grades 6–12” refers to elective courses available to students in these grades that are not part of a defined course sequence. “Tech Prep Program” refers to a college-preparatory program that provides students with academic as well as applied technical skills. The high school program prepares students to continue in a college program that leads to a minimum of a two-year postsecondary degree (or apprenticeship license).