

# Dual Credit Courses - Report Notes

## Table of Contents

Overview .....	2
How to Use this Report .....	2
Report Filters .....	2
Summary Report Tab .....	3
Interactive Data Tab .....	4
Search Course List Tab .....	5
Inclusion/Exclusion Rules .....	6
Terms and Definitions .....	6
Sources and Update Schedule .....	7
Data Contact .....	7
Appendix A: Course Title Cleaning Process (2023-24 and forward) .....	8
Step 1: Match to Previously Cleaned Course Titles .....	8
Step 2: Standardize Unmatched Course Titles .....	8
Appendix B: Course Title Cleaning Process (2018-19 through 2022-23) .....	8
Assign Courses to SCED Subject Areas .....	9
Create Full Course Codes .....	10
Ensure One-to-one Relationship between Course Codes/Titles .....	10
Standardize Course Title Formats .....	11
Convert Community College Codes to CT State Codes .....	12
Appendix C: Data Matching Process and Match Rates .....	13
Step 1: Initial Data Cleaning .....	13
Step 2: Data Matching .....	13
Step 3: Secondary Data Cleaning .....	14
Step 4: Match to students in grades 9-12 in June PSIS .....	14
Match Rates 2023-24 .....	14
Match Rates 2022-23 .....	15

## Overview

Dual credit courses are courses offered to high school students in partnership with Connecticut's institutions of higher education. Dual credit courses include dual enrollment (taken on a college campus) and concurrent enrollment courses (taken on the high school campus). It is an evidence-based strategy with documented positive impacts on high school and college outcomes. For example, research has demonstrated dual credit programs further students' college degree attainment, college access, enrollment, and credit accumulation, as well as their high school completion and general academic achievement. In addition, dual credit courses in high school make college more affordable for Connecticut students, while preparing them for future career opportunities and success. Visit [Connecticut's Dual Credit Opportunities webpage](#) for information about high school and college programs.

The Dual Credit Courses report includes course enrollment numbers from the postsecondary institutions that participated in the CT State Department of Education's annual dual/concurrent enrollment data collection. These numbers are calculated per class so that students with multiple concurrent enrollments will be counted once for each of the classes they completed. The data is also limited to students who successfully completed the dual credit course, which this report defines as earning a grade of "C" or better.

## How to Use this Report

The Dual Credit Courses report contains three dynamic dashboard views: Summary Report, Interactive Data, and Search Course List. Users can toggle between report views **using the tabs in the center near the top of the report pages** (see #1 below). All three views can be filtered by District, High School, College Sector, College/University, and/or Subject using the **dropdown menus at the top of the report pages** (see #2 below). Selected filters are displayed in the **key near the top of these report pages, and orange squares indicate active filters** (see #3 below).

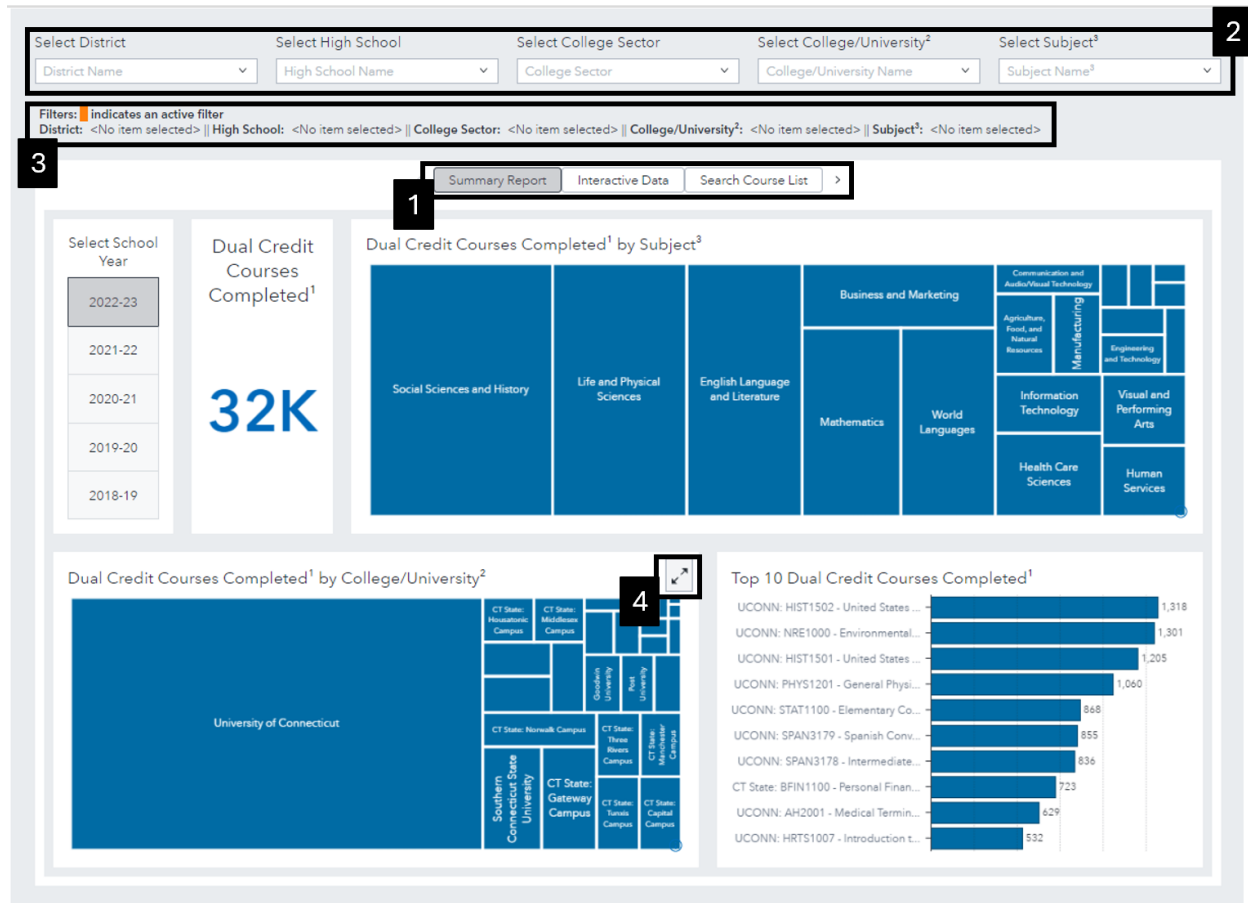
All graphs and data tables can be **maximized using the diagonal arrow button at the top right of the chart/table** (see #4 below). Once maximized, interactive filters will no longer be available. To return to the original view and filters, users can select the same button in the top right corner.

## Report Filters

The following drop-down menus **appear at the top of the page and filter all tabs** in the report (see #2 below). Users can remove any filter selection with the "Clear filter" option. Filter selections appear in the key below the drop-down menus.

- **Select District:** District in which the student was enrolled as of the last day of school during the school year that the dual credit course was taken.
- **Select High School:** High School in which the student was enrolled as of the last day of school during the school year that the dual credit course was taken.
- **Select College Sector:** Sector of college/university that awarded college credit for the dual credit course. Options are: Connecticut State Universities, CT State College, Private Colleges/Universities, and the University of Connecticut. See the [Terms and Definitions](#) section for complete definitions of the college sector categories.

- **Select College/University:** The name of the specific college/university that awarded college credit for the dual credit course.
- **Select Subject:** One of the 24 subject areas used in the [School Courses for the Exchange of Data \(SCED\)](#) classification system that best matched the course.

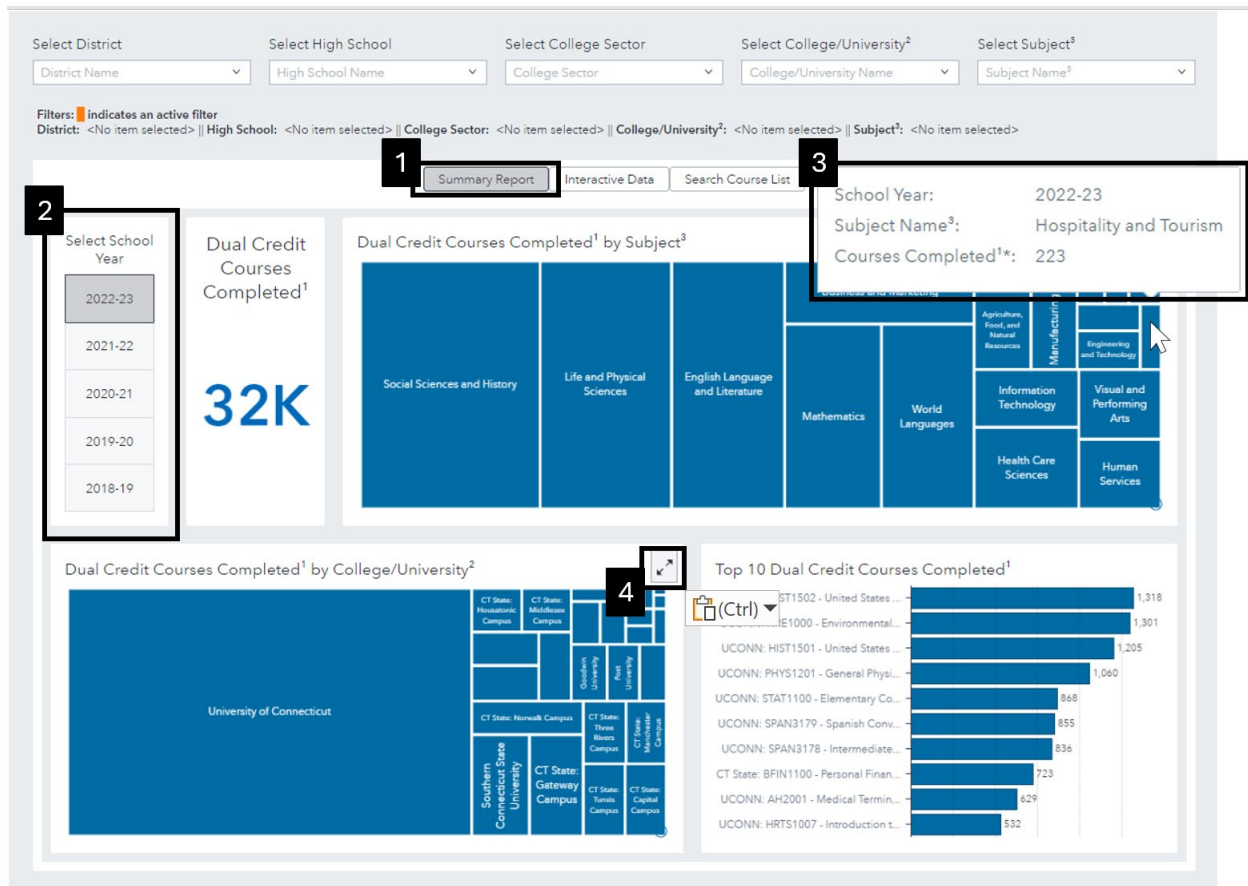


### Summary Report Tab

The Summary Report provides an overview of completed dual credit course enrollments for a single school year, including the overall total, as well as the total completed by subject, college/university, and the top 10 courses completed (see #1 below).

Users can use the **Select School Year button bar to view completed dual credit course data for different school years** (see #2 below). The accompanying graphical representations display nested rectangles, the size of which corresponds with their number relative to the rest of the sample, i.e. the larger the number the larger the rectangle. Due to visual constraints, individual labels for some of the rectangles in a graphical representation may be abbreviated or missing. Additionally, representative rectangles for small and/or suppressed data values may not be easily visible. To view complete labels and exact enrollment numbers, **users can hover the mouse over any specific rectangles and the available information will display** (see #3 below). Each graphical representation can also be **maximized using the arrows button in its upper right-hand corner** (see #4 below). The dual credit course data can also be viewed by District,

High School, College Sector, College/University, and/or Subject using the filters provided at the top of the report page.



### Interactive Data Tab

The Interactive Data report provides dual credit course enrollments across several school years. Users can select up to **three variables (list below) to organize and view the data** (see #1 below). These data can also be **output to Excel using the “Export” button** provided (see #2 below).

- All Students
- District
- High School
- College Sector
- College/University
- Subject
- Course
- English Learner/Multilingual Learner (EL/ML) Status
- Free/Reduced Price Meal Eligibility (2-level)
- Gender
- Grade
- High Needs (F/R, EL or SWD)
- Race/Ethnicity
- Special Education Status (SWD)

See the [Terms and Definitions section](#) for complete definitions of the categories and their values.

Select District:  District Name  
 Select High School:  High School Name  
 Select College Sector:  College Sector  
 Select College/University<sup>2</sup>:  College/University Name  
 Select Subject<sup>3</sup>:  Subject Name<sup>3</sup>

Filters: ■ indicates an active filter  
 District: <No item selected> || High School: <No item selected> || College Sector: <No item selected> || College/University<sup>2</sup>: <No item selected> || Subject<sup>3</sup>: <No item selected>

1 Summary Report Interactive Data Search Course List

Select Variable 1:  All Students  
 Select Variable 2:  All Students  
 Select Variable 3:  All Students

Variable 1	Variable 2	Variable 3	School Year	2018-19	2019-20	2020-21	2021-22	2022-23
				Courses Completed <sup>1</sup> **	Courses Completed <sup>1</sup> **	Courses Completed <sup>1</sup> **	Courses Completed <sup>1</sup> **	Courses Completed <sup>1</sup> **
All Students	All Students	All Students		30,653	31,078	27,634	30,320	32,179
	Subtotal: All Students			30,653	31,078	27,634	30,320	32,179
Subtotal: All Students				30,653	31,078	27,634	30,320	32,179
Total				30,653	31,078	27,634	30,320	32,179

2 EXPORT TO EXCEL

### Search Course List Tab

The Search Course List report includes all of the completed dual credit courses for specific school years, including the College Sector, College/University Name, Course Code, and Course Title data. Users can apply the **Select School Year(s)** menu to view the list of completed dual credit courses for one or more school years (see #1 below). They can also use the **Search by Course Title** function (see #2 below) to look for a specific dual credit course title or associated keyword(s). As with the other reports, these data can be viewed by District, High School, College Sector, College/University, and/or Subject using the filters provided at the top of the report page and **output to Excel using the “Export” button feature** (see #3 below).

Select District:  District Name  
 Select High School:  High School Name  
 Select College Sector:  College Sector  
 Select College/University<sup>2</sup>:  College/University Name  
 Select Subject<sup>3</sup>:  Subject Name<sup>3</sup>

Filters: ■ indicates an active filter  
 District: <No item selected> || High School: <No item selected> || College Sector: <No item selected> || College/University<sup>2</sup>: <No item selected> || Subject<sup>3</sup>: <No item selected>

2 Summary Report Interactive Data Search Course List

3 **Search by Course Title**

Enter Search...

1 **Select School Year(s)**

☒ 2022-23

☐ 2021-22

☐ 2020-21

☐ 2019-20

☐ 2018-19

School Year	College Sector	College/University Name	Course Code	Course Title
2022-23	Connecticut State Universities	Central Connecticut State University	ANTH160	Introduction to Biological Anthropology
2022-23	Connecticut State Universities	Central Connecticut State University	ARAB111	Elementary Arabic I
2022-23	Connecticut State Universities	Central Connecticut State University	ART200	Introduction to Global Art
2022-23	Connecticut State Universities	Central Connecticut State University	BMS380	Emergency Medical Technician (EMT)
2022-23	Connecticut State Universities	Central Connecticut State University	BMS380	Emergency Medical Technician (EMT)
2022-23	Connecticut State Universities	Central Connecticut State University	CCSU103	Career Pathways
2022-23	Connecticut State Universities	Central Connecticut State University	CHEM161	General Chemistry
2022-23	Connecticut State Universities	Central Connecticut State University	CM335	Construction Safety
2022-23	Connecticut State Universities	Central Connecticut State University	COMM115	Fundamentals of Communication
2022-23	Connecticut State Universities	Central Connecticut State University	COMM115	Fundamentals of Communication
2022-23	Connecticut State Universities	Central Connecticut State University	COMM140	Public Speaking
2022-23	Connecticut State Universities	Central Connecticut State University	COMM140	Public Speaking
2022-23	Connecticut State Universities	Central Connecticut State University	COMM140	Public Speaking
2022-23	Connecticut State Universities	Central Connecticut State University	COMM140	Public Speaking
2022-23	Connecticut State Universities	Central Connecticut State University	COMM230	Introduction to Mass Media
2022-23	Connecticut State Universities	Central Connecticut State University	COMM286	Introductory Topics in Communication
2022-23	Connecticut State Universities	Central Connecticut State University	CRM110	Introduction to the Criminal Justice Sys
2022-23	Connecticut State Universities	Central Connecticut State University	CRM110	Introduction to the Criminal Justice Sys
2022-23	Connecticut State Universities	Central Connecticut State University	CRM110	Introduction to the Criminal Justice Sys
2022-23	Connecticut State Universities	Central Connecticut State University	CRM231	Criminal Procedure and Courts
2022-23	Connecticut State Universities	Central Connecticut State University	CS113	Introduction to Computer Programmin
2022-23	Connecticut State Universities	Central Connecticut State University	CS113	Introduction to Computer Programmin
2022-23	Connecticut State Universities	Central Connecticut State University	CS151	Computer Science I

3 EXPORT TO EXCEL

## Inclusion/Exclusion Rules

This report includes all Connecticut students in grades 9-12, who were reported in the [Public School Information System \(PSIS\)](#) June collection and earned a grade of “C” or better in a dual credit course offered by a postsecondary institution participating in the state’s annual dual/concurrent enrollment data collection beginning in the 2018-19 school year.

The dataset does not include:

- Connecticut students enrolled in a dual credit course at a postsecondary institution that does not participate in the state’s annual dual/concurrent enrollment data collection.
- Connecticut students enrolled in a dual credit course who did not earn a grade of “C” or better.
- Connecticut private school students

## Terms and Definitions

Term	Definition
Dual Credit Course Completion	Earning a grade of “C” or better in the dual credit course and receiving college credit for the course.
College/University Sector	<ul style="list-style-type: none"> <li>• <b>Connecticut State Universities:</b> Central, Eastern, Southern, and Western CT State Universities</li> <li>• <b>CT State Community College:</b> One of the 12 CT State campuses</li> <li>• <b>Private Colleges/Universities:</b> Non-public colleges/universities operating within the state of Connecticut.</li> <li>• <b>University of Connecticut:</b> The University of Connecticut’s main and four regional campus locations</li> </ul>
College/University	The postsecondary institution that awarded college credit for the course.
Subject	The <a href="#">School Courses for the Exchange of Data (SCED)</a> subject area determined to most closely align with the dual credit course.
English Learner/Multilingual Learner (EL/ML) Status	Students who were identified as an <a href="#">English Learner/Multilingual Learner (EL/ML)</a> during the year in which the dual enrollment course was taken.
Free/Reduced-Price Meal Eligibility (2-level)	Students who were identified as <a href="#">eligible for free or reduced-price meals</a> or free milk in accordance with the <a href="#">Income Guidelines for the National School Lunch Program</a> (Title 7, CFR 245) during the year in which the dual enrollment course was taken.
Gender	Students’ declared gender, as reported by their district, during the year in which the dual enrollment course was completed.
Grade	The students’ grade, as reported by their district, during the year in which the dual enrollment course was completed.
High Needs (F/R, EL or SWD)	Students who were identified as either Eligible for Free/Reduced-Price Meals, an English Learner, or a Student with Disabilities during the year in which the dual enrollment course was completed.



Term	Definition
Race/Ethnicity	<p>Students' declared race/ethnicity, as reported by their district, during the year in which the dual enrollment course was completed.</p> <ul style="list-style-type: none"> <li>• <b>American Indian or Alaska Native:</b> A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.</li> <li>• <b>Asian:</b> A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.</li> <li>• <b>Black or African American:</b> A person having origins in any of the black racial groups of Africa.</li> <li>• <b>Hispanic/Latino of any race:</b> A person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race</li> <li>• <b>Native Hawaiian or Other Pacific Islander:</b> A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.</li> <li>• <b>Two or more Races:</b> A person having origins in two or more of the racial descriptions who is not of Hispanic or Latino ethnicity.</li> <li>• <b>White:</b> A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.</li> </ul>
Special Education Status (SWD)	<p><u>Students with a disability</u> for which an Individualized Education Plan (IEP) was implemented during the year in which the dual enrollment course was taken.</p>

## Sources and Update Schedule

The source of the demographic data in this report is the June collection of the [Public School Information System](#) (PSIS), which occurs on the last day of each school year. All demographic data in this report were based on the year in which the dual credit course was completed.

A dual/concurrent enrollment data collection is annually conducted each year in August to gather dual credit course records from the postsecondary institutions participating in Connecticut's Next Generation Accountability System.

Matching between these two datasets is completed using a [fuzzy matching](#) algorithm in [SAS DataFlux Data Management Server \(DataFlux\)](#) with nonpublic data captured by both sources including name and date of birth. See [Appendix B](#) for more information on the data matching process and match rates.

This report will be updated annually.

## Data Contact

Danielle Bousquet

[Danielle.Bousquet@ct.gov](mailto:Danielle.Bousquet@ct.gov)

(860) 713-6832

## Appendix A: Course Title Cleaning Process (2023-24 and forward)

The CT State Department of Education (CSDE) collects dual credit data from several CT colleges/universities (postsecondary institution; PSI) each year. Each course record contains a program name or abbreviation (such as BIO or Biology), course number (such as 101), and course title (such as Introduction to Biology). In order to ensure that the data are comparable across years, these course titles need to be standardized. Please see Appendix B for more information about how the initial data cleaning.

**The course programs, numbers, and titles are standardized *within* each PSI;** there is no attempt to match course content across PSIs. This means two courses with the same content offered at different PSIs may have different program names/abbreviations, course numbers, and course titles. Conversely, two courses with the same name offered at different PSIs may not contain the same content.

### *Step 1: Match to Previously Cleaned Course Titles*

For *each* PSI, the course program and number are checked against the course records from previous school years, in which the course titles have already been cleaned. If a match is found, the previously standardized course title is retained for use in the dashboard. For example, if a PSI submitted a record for BIO 101 with the title “Intro to Biology” in 2021-22, this would have been standardized to “Introduction to Biology” (see Appendix B for more information). If the same PSI submitted a record for BIO 101 with the title “Biology: An Intro” in 2023-24, the course program and number would be matched to the previous record, and the original standardized course title, “Introduction to Biology,” would be used. When checking, “Introduction to Biology” would be considered an acceptable match to “Biology: An Intro.”

After matching, the course title provided by the PSI for the current year is checked against the standardized course title to ensure that the match makes sense. In the previous example, the standardized course title “Introduction to Biology” would be considered an acceptable match for “Biology: An Intro.”

### *Step 2: Standardize Unmatched Course Titles*

Course titles that did not have matches from previous school years are cleaned using the same methods described in Appendix B, including:

- [assigning courses to a SCED subject area](#),
- [creating full course codes](#),
- [ensuring a one-to-one relationship between course codes/titles](#), and
- [standardizing course title formats](#).

## Appendix B: Course Title Cleaning Process (2018-19 through 2022-23)

The CT State Department of Education (CSDE) has collected dual credit data from several CT colleges/universities (postsecondary institution; PSI) for the last few years as an additional path to meeting the criteria for the Next Generation Accountability System (Next Gen) Indicator 6. In addition to the data required to calculate Indicator 6, each course record contains a program name or abbreviation (such as BIO or Biology), course number (such as 101), and course title



(such as Introduction to Biology). Because these variables were not being used in the indicator 6 calculation, they were not tested or cleaned. **Appendix B outlines the steps that were taken to standardize these variables** for the 2018-19 through 2022-23 records. Please see Appendix A for more information about the current process used (beginning with the 2023-24 school year).

**The course programs, numbers, and titles were standardized *within* each PSI**; there was no attempt to match course content across PSIs. This means two courses with the same content offered at different PSIs may have different program names/abbreviations, course numbers, and course titles. Conversely, two courses with the same name offered at different PSIs may not contain the same content.

**The goals of the data cleaning process were:**

- assign each course to one of the 24 subject areas in the [School Courses for the Exchange of Data \(SCED\)](#) classification system;
- create a full course code by standardizing program names, program abbreviations, and course numbers;
- ensure that there is a one-to-one relationship between course codes/numbers and course titles;
- standardize the course title formats, including abbreviations, punctuation, and capitalization; and
- convert the course codes/titles for the CT Community Colleges to the codes/titles in the combined [CT State Community College Academic Catalog](#).

### *Assign Courses to SCED Subject Areas*

All courses needed to be assigned to a subject to allow the user to compare similar courses across districts, high schools, and PSIs, however the program codes/names provided by the PSIs were not consistent with each other. Instead, the CSDE decided to use the [School Courses for the Exchange of Data \(SCED\)](#) classification system, developed by the National Forum on Education Statistics, which was developed to meet the need for common, widely understood, standardized course codes. Many states, including Connecticut, use the SCED system to collect and report all K-12 course data, which ensures that the Dual Credit report will be consistent with other coursework reports available on EdSight.

The SCED course codes are organized into 24 separate subject area codes:

SCED Subject Area Code	Subject
01	English Language and Literature
02	Mathematics
03	Life and Physical Sciences
04	Social Sciences and History
05	Visual and Performing Arts
07	Religious Education and Theology
08	Physical, Health, and Safety Education
09	Military Science
10	Information Technology

SCED Subject Area Code	Subject
11	Communication and Audio/Visual Technology
12	Business and Marketing
13	Manufacturing
14	Health Care Sciences
15	Public, Protective, and Government Services
16	Hospitality and Tourism
17	Architecture and Construction
18	Agriculture, Food, and Natural Resources
19	Human Services
20	Transportation, Distribution and Logistics
21	Engineering and Technology
22	Miscellaneous
23	Non-Subject-Specific
24	World Languages
25	Integrative Learning

*Note: Although the above table includes subject codes numbering to '25' there are indeed 24 unique subject codes because the number 6 is omitted.*

**Dual credit courses were assigned SCED subject codes based on their program codes and/or course titles.** A course like “CS110 – Computer Science,” for example, was assigned SCED subject code 10 or “Information Technology.” When a dual credit course’s program code and course title did not align with a SCED subject code, the course’s catalog description was reviewed and a SCED subject code determination was made based on the information available.

### *Create Full Course Codes*

Full course codes (such as BIO101) can be used to look up course descriptions quickly in each PSI’s course catalog. In the source data, the “program name” field contained a mixture of program names and program abbreviations, and the program names and course numbers for some PSIs were not consistent across years.

To create the full course codes for each course, the “program name” field was separated into two separate columns – program name and program abbreviation – which were validated using the PSIs’ course catalogs. Program names and abbreviations were standardized within PSI, but not across PSIs. Depending on the PSI, a Mathematics course may have the program abbreviation M, MA, MTH, MAT, and MATH, for example. Additionally, any letters at the end of course codes were removed unless the letter(s) were required to distinguish it from another course of the same code with different titles.

### *Ensure One-to-one Relationship between Course Codes/Titles*

The data were cleaned to ensure that each full course code matched with one, and only one, course title. In the event that a full course code had records with multiple course titles, or vice versa, the PSI’s course catalog was consulted to determine the correct code/title to use, with preference to the most recently offered course code/title.

**Identical dual credit courses listed in two different academic programs (i.e., cross-listed courses) were standardized to the same program.** In these cases, the course description was compared to specific courses within SCED to find the course that most closely aligned with the topics outlined, and the subject area was taken from that SCED code. The data were then subsequently updated to reflect a consistent program code. For example, the course title “Art History” was listed twice in a particular PSI’s course catalog, in both the “Art” and “History” programs. In the SCED classification system, “Art History” has the course code 05152, which is part of the “Visual and Performing Arts” subject area. Therefore, the program code and program names were standardized to the “Art” program.

Source Data			Cleaned Data			
Program Code	Course Number	Course Title	Program Code	Program Name	Course Number	Course Title
ART	103	Art History	ART	Art	103	Art History
HIS	103	Art History	ART	Art	103	Art History

**The lab and lecture sections of a course were retained as separate, unique records when they had distinct course codes.** For example, “CHEM161 – General Chemistry” and “CHEM162 – General Chemistry Laboratory” are separate and unique records in the data even though these two courses must be taken concurrently. Conversely, lab and lecture sections with the same course codes received the same standardized designation. For example, “BIO103 – General Biology I Lecture” and “BIO103 – General Biology I Lecture/Lab” are both designated “BIO103 – General Biology I” in the dual credit data. See examples below.

Source Data			Cleaned Data				Notes
Program Code	Course Number	Course Title	Program Code	Program Name	Course Number	Course Title	
CHEM	161	General Chemistry	CHEM	Chemistry	161	General Chemistry	Two distinct course codes/names
CHEM	162	General Chemistry Laboratory	CHEM	Chemistry	162	General Chemistry Laboratory	
BIO	103	General Biology I Lecture	BIO	Biology	103	General Biology I	One distinct course code/name
BIO	103	General Biology I Lecture/Lab	BIO	Biology	103	General Biology I	

### *Standardize Course Title Formats*

The following rules were used to standardize course title formats. See examples below.

Rule	Source Course Title	Cleaned Course Title
Abbreviations were replaced with complete words, and prepositions were added where appropriate.	US History	United States History
	Intro Psych	Introduction to Psychology

Rule	Source Course Title	Cleaned Course Title
Amperands (&) were replaced with <i>and</i> .	Anatomy & Physiology	Anatomy and Physiology
Course titles were formatted using title case.	Manufacturing basics	Manufacturing Basics
Course sequences were changed to roman numerals.	Calculus 2	Calculus II
Course titles containing lists were formatted to use the serial (Oxford) comma.	Dynamics of Gender, Race and Class	Dynamics of Gender, Race, and Class
Extraneous characters were removed, including scheduling information.	*Nutrition	Nutrition
	Composition late semester start	Composition

### *Convert Community College Codes to CT State Codes*

Beginning in 2023-24, the community colleges in CT combined to form CT State Community College with a common course catalog. In order to provide continuity in the dashboard across years, the program names/abbreviations and course numbers/titles were converted to the corresponding courses in the [CT State Academic Catalog](#). **Once the original course records were matched, the course information was taken from the new catalog for all years.**

The following criteria were considered when matching original community college course records to the new CT State Academic Catalog. The examples are based on the course description for Intermediate Algebra below, all of which would have “MATH1010” as the cleaned course code and “Intermediate Algebra” as the cleaned course title.

MATH 1010 - Intermediate Algebra

### MATH 1010 - Intermediate Algebra

Credits: 3

This course is a further study of algebra and mathematical modeling of functions and relations represented by tables, graphs, words, and symbols. Polynomial functions and expressions with special attention to linear, quadratic, exponential, rational, and radical functions are studied. There is an emphasis on modeling and applications for all topics. The use of mathematics specific technology to support understanding of the concepts is required.

**Prerequisite:** Grade of C or in higher in [MATH 0988](#) or [MATH 0989](#) or placement using multiple measures

**Elective Code(s):** BUS, LART

**Previous** MAT\* 137, MAT\* 136, MAT\* 139, MAT\* 138

A screenshot of a course description from the CT State Academic Catalog.

**In most cases, match decisions were made based on the “Previous” field of the new CT State Academic Catalog.** For example, any of the original community college records with the course codes MAT136, MAT137, MAT138, or MAT139 (regardless of the original course title) were considered a match to MATH1010. **If the original course code was not included in the “Previous” field of any course descriptions, matches were attempted based on the course title.** For example, original community college records with the course titles “Intermediate Algebra” or “Algebra – Intermediate Level” were considered a match to MATH1010.

**If there was no clear match based on name, the original course codes/titles were checked against other years and other community colleges.** For example, an original course record labeled “MAT135 – Algebra II” does not match either the “Previous” field or the course title. However, if a different community college had a course record of either (a) “MAT136 – Algebra II” (which does match a code in the “Previous” field), or (b) “MAT135 – Intermediate Algebra” (which does match the title), then “MAT135 – Algebra II” would be considered a match to MATH1010. **In the event that a match could not be found, the original course information was retained.**

## Appendix C: Data Matching Process and Match Rates

The Dual Credit Courses report uses data that has been provided to the CSDE directly from many CT postsecondary institutions (PSIs) through the [Dual/Concurrent Enrollment Data Collection](#). These records are then matched to public-school students in Grades 9-12 according to the following process. The table below contains the match rates for the 2022-23 and 2023-24 school years, by PSI, after each step of the data matching and cleaning process.

### Step 1: Initial Data Cleaning

First, the raw data files are loaded, checked for formatting issues, and saved in [Statistical Analysis System \(SAS\)](#) table format. Then records are excluded from the dataset if they are (a) a duplicate of another record, (b) records with insufficient matching information, or (c) records known to be for students of private, out-of-state, or home schools.

Records are matched based on the student’s SASID (if available), first name, last name, and date of birth. PSIs are encouraged, but not required, to provide SASIDs for students. If the SASID *has been provided*, the record need only contain either the student’s Last Name or Date of Birth to be included in the match process. If the SASID *has not been provided*, the record must contain the first name, last name, and date of birth to be included in the match process.

Dual credit records are only included in the final data if the student is attending a CT public school at the time they took the course. PSIs are encouraged, but not required, to provide the student’s high school as part of the collection; if the record indicates that the student was attending a private, out-of-state, or home school, the record will be excluded. Note that the PSIs do not provide high school information for all records, so *some students attending a non-public school will make it through this step* and will be filtered out later in the process.

### Step 2: Data Matching

Records are matched to students based on First Name, Last Name, Date of Birth, and SASID (if available) using a [fuzzy matching](#) algorithm in [SAS DataFlux Data Management Server \(DataFlux\)](#). Records that are not matched are checked for a variety of common matching errors, such as the use of nicknames and birthdates that have the month and day switched. After the initial matching is complete, records that matched to multiple SASIDs are checked by hand to ensure that the record is being matched to the correct student. The remaining unmatched records are also checked by hand for possible matches.

Students attending private, out-of-state, or home schools will be filtered out at this stage *if they have never attended a CT public school*. Students who attended a CT public school in an earlier

grade who then transferred to a private, out-of-state, or home school will be retained at this step and filtered out later in the process.

### *Step 3: Secondary Data Cleaning*

Remedial courses, records that have 0 (or missing) credits earned, and courses with grades such as W (withdrawn), A (audit), I (incomplete), P (pass), etc. are excluded.

### *Step 4: Match to students in grades 9-12 in June PSIS*

The matched SASIDs are checked against the June [Public School Information System \(PSIS\)](#) data collection. Students must have enrolled in grades 9-12 at a CT public high school during the year that the course was taken. The remaining students attending private, out-of-state, or home schools are filtered out at this time.

### *Match Rates 2023-24*

Percentages in the table below are based on the number of records in the original data provided by the PSI for the 2023-24 school year.

College/University	Records in Original Data	Records after Step 1 (Initial Cleaning)	Records after Step 2 (Data Matching)	Records after Step 3 (Secondary Cleaning)	Records after Step 4 (Match to PSIS)
CT State: Asnuntuck Campus	457	457 (96.3%)	440 (96.1%)	439 (93.2%)	426 (90.4%)
CT State: Capital Campus	847	847 (86.2%)	730 (86.0%)	728 (58.2%)	493 (55.8%)
CT State: Gateway Campus	1,483	1,483 (97.2%)	1,441 (95.3%)	1,413 (92.9%)	1,378 (86.8%)
CT State: Housatonic Campus	763	763 (91.7%)	700 (90.2%)	688 (77.2%)	589 (74.8%)
CT State: Manchester Campus	683	683 (88.7%)	606 (87.8%)	600 (83.2%)	568 (79.5%)
CT State: Middlesex Campus	504	504 (96.6%)	487 (95.0%)	479 (93.1%)	469 (90.9%)
CT State: Naugatuck Valley Campus	318	318 (98.7%)	314 (98.4%)	313 (68.6%)	218 (66.7%)
CT State: Northwestern CT Campus	148	148 (98.6%)	146 (98.0%)	145 (87.2%)	129 (72.3%)
CT State: Norwalk Campus	893	893 (98.8%)	882 (97.2%)	868 (93.3%)	833 (81.4%)
CT State: Quinebaug Valley Campus	625	625 (97.3%)	608 (94.2%)	589 (89.4%)	559 (86.4%)
CT State: Three Rivers Campus	648	648 (99.7%)	646 (99.7%)	646 (96.1%)	623 (92.1%)
CT State: Tunxis Campus	961	961 (99.0%)	951 (98.8%)	949 (96.7%)	929 (94.0%)
Central CT State University	518	518 (100.0%)	518 (99.6%)	516 (86.7%)	449 (86.3%)
Eastern CT State University	711	711 (100.0%)	711 (100.0%)	711 (97.3%)	692 (97.3%)
Southern CT State University	1,802	1,802 (93.3%)	1,681 (93.2%)	1,680 (89.2%)	1,607 (89.1%)
Western CT State University	203	203 (86.7%)	176 (86.7%)	176 (86.7%)	176 (86.7%)
University of Connecticut	26,614	26,614 (100.0%)	26,613 (100.0%)	26,610 (100.0%)	26,610 (99.9%)
Albertus Magnus College	6	6 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Connecticut College	11	11 (100.0%)	11 (100.0%)	11 (90.9%)	10 (90.9%)
Goodwin University	397	397 (100.0%)	397 (100.0%)	397 (98.0%)	389 (97.7%)
Mitchell College	65	65 (100.0%)	65 (100.0%)	65 (92.3%)	60 (86.2%)
Post University	623	623 (100.0%)	623 (98.7%)	615 (96.8%)	603 (93.7%)
Quinnipiac University	282	282 (100.0%)	282 (76.6%)	216 (69.9%)	197 (68.4%)
Sacred Heart University	236	236 (91.9%)	217 (82.2%)	194 (82.2%)	194 (72.0%)
University of Bridgeport	614	614 (96.9%)	595 (86.2%)	529 (85.5%)	525 (85.2%)
University of Hartford	152	152 (100.0%)	152 (98.0%)	149 (97.4%)	148 (86.2%)
University of New Haven	57	57 (100.0%)	57 (98.2%)	56 (96.5%)	55 (96.5%)
University of Saint Joseph	3	3 (100.0%)	3 (100.0%)	3 (100.0%)	3 (100.0%)
Wesleyan University	22	22 (100.0%)	22 (100.0%)	22 (90.9%)	20 (81.8%)
<b>Total</b>	<b>40,646</b>	<b>40,646 (98.6%)</b>	<b>40,074 (97.9%)</b>	<b>39,807 (95.8%)</b>	<b>38,952 (94.6%)</b>



*Match Rates 2022-23*

Percentages in the table below are based on the number of records in the original data provided by the PSI for the 2022-23 school year.

College/University	Records in Original Data	Records after Step 1 (Initial Cleaning)	Records after Step 2 (Data Matching)	Records after Step 3 (Secondary Cleaning)	Records after Step 4 (Match to PSIS)
CT State: Asnuntuck Campus	900	870 (96.7%)	869 (96.6%)	849 (94.3%)	556 (61.8%)
CT State: Capital Campus	845	764 (90.4%)	764 (90.4%)	697 (82.5%)	669 (79.2%)
CT State: Gateway Campus	1708	1,624 (95.1%)	1,624 (95.1%)	1,409 (82.5%)	1,332 (78.0%)
CT State: Housatonic Campus	689	634 (92.0%)	634 (92.0%)	576 (83.6%)	556 (80.7%)
CT State: Manchester Campus	829	743 (89.6%)	743 (89.6%)	703 (84.8%)	637 (76.8%)
CT State: Middlesex Campus	550	523 (95.1%)	521 (94.7%)	511 (92.9%)	503 (91.5%)
CT State: Naugatuck Valley Campus	374	339 (90.6%)	339 (90.6%)	319 (85.3%)	311 (83.2%)
CT State: Northwestern CT Campus	315	266 (84.4%)	266 (84.4%)	104 (33.0%)	100 (31.7%)
CT State: Norwalk Campus	1536	1,517 (98.8%)	1,509 (98.2%)	1,422 (92.6%)	947 (61.7%)
CT State: Quinebaug Valley Campus	696	643 (92.4%)	640 (92.0%)	610 (87.6%)	593 (85.2%)
CT State: Tunxis Campus	852	832 (97.7%)	832 (97.7%)	755 (88.6%)	692 (81.2%)
CT State: Three Rivers Campus	761	743 (97.6%)	742 (97.5%)	673 (88.4%)	630 (82.8%)
Central CT State University	355	355 (100.0%)	352 (99.2%)	332 (93.5%)	322 (90.7%)
Eastern CT State University	502	502 (100.0%)	502 (100.0%)	484 (96.4%)	484 (96.4%)
Southern CT State University	1451	1,449 (99.9%)	1,443 (99.4%)	1,398 (96.3%)	1,396 (96.2%)
Western CT State University	189	189 (100.0%)	189 (100.0%)	166 (87.8%)	166 (87.8%)
University of Connecticut	24158	24,144 (99.9%)	24,118 (99.8%)	23,040 (95.4%)	22,993 (95.2%)
Albertus Magnus College	3	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Connecticut College	29	5 (17.2%)	5 (17.2%)	3 (10.3%)	3 (10.3%)
Goodwin University	561	561 (100.0%)	561 (100.0%)	514 (91.6%)	514 (91.6%)
Mitchell College	42	42 (100.0%)	42 (100.0%)	40 (95.2%)	39 (92.9%)
Post University	538	538 (100.0%)	536 (99.6%)	536 (99.6%)	533 (99.1%)
Quinnipiac University	181	167 (92.3%)	128 (70.7%)	115 (63.5%)	110 (60.8%)
Sacred Heart University	400	353 (88.3%)	311 (77.8%)	311 (77.8%)	114 (28.5%)
University of Bridgeport	584	570 (97.6%)	501 (85.8%)	367 (62.8%)	364 (62.3%)
University of Hartford	105	105 (100.0%)	105 (100.0%)	104 (99.0%)	94 (89.5%)
University of New Haven	60	59 (98.3%)	56 (93.3%)	52 (86.7%)	50 (83.3%)
Wesleyan University	23	23 (100.0%)	22 (95.7%)	16 (69.6%)	15 (65.2%)
<b>Total</b>	<b>39236</b>	<b>38,560 (98.3%)</b>	<b>38,354 (97.8%)</b>	<b>36,106 (92.0%)</b>	<b>34,723 (88.5%)</b>