



NORTH CAROLINA
State Board of Education
Department of Public Instruction

Report to the North Carolina General Assembly

K-12 Computer Science Consolidated Data
Report

G.S. 115C-12(48); S.L.2021-180, sec.
7.9(g)

Date Due: March 15, 2022
DPI Chronological Schedule, 2021-2022

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LEGISLATION

This consolidated report includes the annual report information for K-12 Computer Science & Technology Education.

G.S. 115C-12(48); S.L. 2021-180, sec. 7.9(g) requires the State Board of Education to report annually to the Joint Legislative Oversight Committee (JLEOC) on the use of Computer Science funding, courses, enrollments disaggregated, and the number of teachers prepared to teach computer science. For 2021-2022 only, PSUs shall submit data by January 15, 2022. SBE shall submit to JLEOC by March 15, 2022.

By **November 15** of each year the **Department of Public Instruction**, beginning with an initial report by November 15, 2022, shall submit a Computer Science Report that includes:

- (1) The use of Computer Science & Technology Education funds.
- (2) The statewide Computer Science course offerings.
- (3) The number of enrollments disaggregated.
- (4) The number of teachers prepared to teach computer science.
- (5) Any other information the Superintendent of Public Instruction deems necessary.

COMPUTER SCIENCE CONSOLIDATED REPORT - INTRODUCTION

Computer science education is important now more than ever. The COVID-19 pandemic has highlighted our society's reliance on computing and its power to help businesses innovate and adapt, yet at the same time has surfaced greater disparities for students studying computer science. Access to computer science is key to addressing equity issues in society, but yet only 51% of our nation's high schools teach foundational computer science; with 59% of North Carolina's high schools offering computer science courses. The North Carolina Computer Science Initiative seeks to expand computer science opportunities to all students in North Carolina. The overall goal is to provide opportunities for students to learn computer science and gain the skills needed to: (1) create and contribute, not just use and consume in the digital economy; and (2) actively engage as informed citizens in our complex, tech-driven world.

While this consolidated report does not offer recommended actions regarding computer science education, this report does provide statewide data on use of computer science funds, courses, enrollments disaggregated, and the number of teachers prepared to teach computer science. It is important to note that this report does not include data for North Carolina K-5 students.

USE OF COMPUTER SCIENCE FUNDING

Computer science funds were used to support the operational needs of the K-12 Computer Science & Technology Education section, creation of K-12 Computer Science Standards, creation of print/digital materials and to cover the costs associated with teacher professional development opportunities that support the NC Computer Science Initiative. Professional development opportunities were provided through partnerships with The Friday Institute for Educational Innovation at NCSU, Prodigy Learning, and Duke University's Open Design Studio.

COMPUTER SCIENCE COURSE OUTLINE

The CSTA and the K-12 Computer Science Framework define computer science as “*the study of computers and algorithms, including their principles, their hardware and software designs, their implementation, and their impact on society.*” Learning computer science means becoming creators of technology rather than just consumers.

North Carolina’s middle schools and high schools offer a variety of computer science courses. Currently these courses and curriculum are housed in the Career & Technical Education Division of the North Carolina Department of Public Instruction. The below tables list an overview of computer science course offerings.

Table 1: Computer Science Middle School Courses

Course ID	Course Name
CY01	Keyboarding and Basic Word Processing
CY02	Introduction to Office Productivity
CY03	Office Productivity Applications
CY04	Digital Literacy
CY10	Learn to Code I
CY11	Learn to Code II
CY12	Learn to Code III
CY13	Apple: Everyone Can Code I - Puzzles
CY14	Apple: Everyone Can Code II - Adventures
CY20	Computer Science Discoveries I
CY21	Computer Science Discoveries II
CY22	Computer Science Discoveries III
CY30	Minecraft Coding - Introductory
CY31	Minecraft Coding - Intermediate
CY32	Minecraft Coding - Advanced
CY90	Exploring Computer Science
CY95	Exploring Digital Arts I

Table 2: Computer Science High School Courses

Course Number	Course Name
0A02	AP Computer Science Principles
2A02	AP Computer Science
2I00	IB Computer Science SL
2I01	IB Computer Science HL
3I06	IB Design Technology SL
3I07	IB Design Technology HL
BC10	PLTW Cybersecurity
BD10	Multimedia and Webpage Design
BD12	eCommerce I
BD14	eCommerce II
BI05	IB Information Tech in a Global Society
BI10	Foundations of Information Technology

BI12	CompTIA IT Fundamentals
BL03	Advanced Computer Science
BL04	Film Production Studio I
BL05	Film Production Studio II
BL06	Geospatial Industry I
BL07	Geospatial Industry II
BL08	Introduction to Computer Science
BL09	Networking II (Linux)
BL15	PLTW Computer Science Essentials
BL17	Introduction to Cyber Security
BL18	Foundations of Cyber Security
BL20	Honors Audio Engineering
BL21	Cyber Literacy I
BL22	Cyber Literacy II
BL23	Microsoft Software Development Fundamentals
BL27	Apple App Development
BL30	Digital Forensics
BL35	App Development with Swift I
BL36	App Development with Swift II
BL37	App Development with Swift III
BL40	Digital Film Editing and Production I
BL42	Digital Film Editing and Production II
BL51	Microsoft HTML5 II
BL53	Develop in Swift Fundamentals
BL54	App Development with Swift Level II Hon
BL55	Swift App Development Innovations
BL97	NAF Extension and Credentials - Wake
BM40	Database Essentials
BN20	Network Administration I
BN22	Network Administration II
BN24	Network Administration III
BN31	Network Security I
BN32	Network Security II
BP01	Introduction to Computer Science
BP10	Computer Programming I
BP12	Computer Programming II
BP14	Python Programming I
BP16	Python Programming II
BP20	SAS Base Programming
BP30	Oracle Database Programming I
BP32	Oracle Database Programming II
BP41	Computer Science I
BP42	Computer Science II
BP50	C# (CSharp) Programming
BR11	SREB AC Informatics Comp Network and Database

BR12	SREB AC Informatics Design for Dig World
BR13	SREB AC Informatics Database in the Cloud
BR14	SREB AC Informatics Dev a Cloud Presence
CL01	Assistive Tools Technology I
CL02	Assistive Tools Technology II
CL03	Audio Broadcasting Academy I
CL04	Audio Broadcasting Academy II
CN30	AOIT Principles of Info Technology
CN31	AOIT Web Design
CN32	AOIT Introduction to Programming
CN33	AOIT Computer Networking
CN34	AOIT Computer Systems
CN35	AOIT Database Design
CN36	AOIT Digital Video Production
CN37	AOIT Graphic Design
CN38	AOIT Principles of IT Extended
II11	Cisco Network Engineering Technology I
II12	Cisco Network Engineering Technology II
II13	Cisco Network Engineering Technology III
II14	Cisco Network Engineering Technology IV
II21	Computer Engineering Technology I
II22	Computer Engineering Technology II
II31	Adobe Visual Design
II32	Adobe Digital Design
II33	Adobe Video Design
IL12	Foundations of Cybersecurity
TL44	Introduction to Modeling and Animation
TL45	Advanced Modeling and Animation
TL50	Computer Modeling and Animation
TL51	3D Modeling II
TL52	Unity 3D Programming II
TS24	Digital Design and Animation I
TS25	Digital Design and Animation II
TS31	Game Art and Design
TS32	Advanced Game Art and Design

Table 3: Computer Science Career & College Promise Courses

Course Number	Course Name
BW32	CIS110 Intro to Computers
BW35	CIS115 Intro to Prog and Logic
BW36	CSC134 C++ Programming
BW38	CSC139 Visual BASIC Prog
BW40	CSC151 JAVA Programming

BW42	CSC239 Adv Visual BASIC Prog
BW47	CTS115 Info Sys Business Concept
BX26	CSC120 Computing Fundamentals I
BX27	CSC130 Computing Fundamentals II
IJ04	CSC249 Data Structure and Algorithms
IJ05	CSC251 Advanced JAVA Programming
TW17	EGR120 Engineering and Design Graphics
TW54	EGR212 Logic System Design I
TW55	EGR215 Network Theory I
TW57	EGR220 Engineering Statics
TW58	EGR225 Engineering Dynamics
TW59	EGR228 Intro to Solid Mechanics
TW63	EGR214 Numerical Methods for Engineers

COMPUTER SCIENCE COURSES ENROLLMENT

Data shows that computer science is not exempt to the effects of societal & systemic inequities. Often Black/African American, Hispanic/Latino/Latina and Native American/Alaskan students are less likely to attend a school that teaches a foundational computer science course. Students that reside in rural areas, students with disabilities, English language learners, and economically disadvantaged students are also underrepresented in computer science courses. The below tables highlight demographics surrounding computer science in North Carolina.

Table 4: Computer Science Course Enrollment – General Enrollment Information

Category	Total or Percentage
Students Enrolled in Computer Science Courses	59,710
of Students Enrolled in Computer Science Courses	7.1%
% Economically Disadvantaged Students	7.2%
% Students with Disabilities	5.9%
% English Language Learners	5.4%

Data Retrieved from the NC Computer Science Dashboard

Table 5: Computer Science Course Enrollment by Course Type

Course Type	Percentage
AP/IB	10.3%
Community College	0.7%
Virtual	1.6%

Data Retrieved from the NC Computer Science Dashboard

Table 6: Computer Science Course Enrollment by Gender

Gender	Percentage
Male	64%
Female	36%

Data Retrieved from the NC Computer Science Dashboard

Table 7: Computer Science Course Enrollment - Percentage Race/Ethnicity in Districts vs Percentage Enrolled

Race/Ethnicity	% Students in District	% Enrolled in Computer Science
Black	25%	26%
Hispanic	19%	17%
Hawaiian/Pacific Islander	0%	0%
American Indian/Alaskan Native	1%	1%
White	47%	50%
Asian/Pacific Islander	3%	6%
Two or More Races	4%	0%

Data Retrieved from the NC Computer Science Dashboard

TEACHER PREPARATION

NCDPI is in partnership with the Friday Institute to provide professional development for middle school and high school educators to through their Computer Science Professional Learning Program so that every middle school and high school in North Carolina has highly qualified computer science teachers. Teachers with existing CTE licensure can obtain 9-12 CTE computer programming endorsement through academic coursework. At the moment, there is not an established guideline or approved program at institutions of higher learning to offer computer science to preservice teachers.

COMPUTER SCIENCE LANDSCAPE MAP

In order to respond more appropriately in the next academic year to the professional development needs of teachers across the state of NC, in partnership with the Friday Institute, DPI elevated the first CS Landscape Map to the State Board of Education in December of 2021 to specifically address the gaps, celebrations, and challenges facing our eight educational regions. A link to the beta landscape map can be found here: [NC Computer Science Landscape Map](#)