



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 |

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| BL12 | 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 |

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| 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 |

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|------|--|
| 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](#)