

HIGH SCHOOL COMPUTER SCIENCE EDUCATION COURSE CODES GRADES 9-12

*High school (grades 9-12) courses in Computer Science Education **require 120 contact hours** per credit.*

Course Code	Course Name	Recommended Grade Levels	Description	High School Credit Options*	License/credential Required**
23011	Computer Science Applications	9-12	The focus of this course is microcomputer operation system functions and commands. Students learn about operating system concepts, disk, and file formats, disk and file management, and control and processing programs. Students learn to use utilities to sort, merge, copy, back up, and recover data. They also perform the installation and execution of business applications software.	½ or 1 <i>Max credit = 1</i>	License Code: 23000-Computer Science ♦ 5-12 or 9-12
23012	Computer Science Programming	9-12	Basic programming concepts are presented, which are transferable to other programming languages. Foundational concepts and fundamentals of computer programming, including logic, design, coding, structure, and controls, are addressed. Careers in programming are explored, and students are provided with opportunities to increase their communication, teamwork, and critical thinking skills. Business projects are used to show how programming skills are used in the business world.	½ or 1 <i>Max credit = 1</i>	
23013	Integrated Mathematics for Computer Science/Information Technology (Computer Science) ♦ Recommended Prerequisite: Algebra I and Computer Science Programming or Programming Essentials-Visual Basics	9-12	This course is computer science with a major focus on math. Course topics are divided into six areas: sets, functions, and relations; basic logic; proof techniques; counting basics; graphs and trees; and discrete probability. Mathematical topics are interwoven with computer science applications to enhance the student's understanding of the introduced mathematics while students develop the ability to see computational problems from a mathematical perspective. Topics also include the study of properties and operations of the real number system, evaluating rational algebraic expressions, solving, and graphing first-degree equations and inequalities, translating word problems into equations, operations with and factoring of polynomials, and solving simple quadratic equations. Algorithms in both mathematics and computer science contexts will be explored in depth. Note: This course can be taught for Computer Science credit only. For Career and Technical Education credit, Integrated Mathematics for Computer Science/Information Technology can be found under Information Technology. For Mathematics credit, Integrated Mathematics for Computer Science/Information Technology can be found under Mathematics.	½ or 1 <i>Max credit = 1</i>	

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Course Code	Course Name	Recommended Grade Levels	Description	High School Credit Options*	License/credential Required**
23015	Advanced Computer Science Programming	10-12	Advanced Computer Science Programming provides students with the knowledge and skills necessary to construct computer programs in one or more languages. Computer coding and program structure are often introduced with the BASIC language, but other computer languages, such as Visual Basic (VB), Java, Pascal, C++, and COBOL, may be used instead. Initially, students learn to structure, create, document, and debug computer programs, and as they progress, more emphasis is placed on design, style, clarity, and efficiency. Students may apply the skills they learn to relevant applications such as modeling, data management, graphics, and text processing.	½ or 1 Max credit = 1	
23580	Advanced Placement Computer Science A©	10-12	AP Computer Science A is equivalent to a first-semester, college-level course in computer science. The course introduces students to computer science with fundamental topics that include problem-solving, design strategies and methodologies, organization of data (data structures), approaches to processing data (algorithms), analysis of potential solutions, and the ethical and social implications of computing. The course emphasizes object-oriented and imperative problem-solving and design using Java language. These techniques represent proven approaches for developing solutions that can scale from small, simple problems to large, complex ones. The AP Computer Science A course curriculum is compatible with many CS1 courses in colleges and universities.	½ or 1 Max credit = 1	License Code: 23000-Computer Science ♦ 5-12 or 9-12
23582	Advanced Placement Computer Science Principles©	9-12	This course focuses on computational thinking, which is vital for success in all disciplines. Students use computational tools to analyze and study data. They also work with large data sets to identify, analyze, and draw conclusions from trends. It also focuses on student creativity and collaboration to develop oral and written communication and problem-solving skills. Students will use software and technology to explore questions that interest them.	½ or 1 Max credit = 1	

* High school curricular requirements are spelled out in NDCC 15.1-21-02. Maximum credit refers to the maximum units of credit a student may earn for a course over four years of high school. (Example: Band - a student may be enrolled in band all four years of high school -- earning a possible total of four units of credit.)

** Please refer to the second page of the teacher's North Dakota Educator's Professional license to verify which subject areas a teacher is qualified to teach. Licenses and endorsements are obtained on a teaching license from the Education Standards and Practices Board (ESPB). Credentials are obtained from the Department of Public Instruction (DPI) and issued to individuals with a teaching license.