

Wyoming Department of Education Required Virtual Education Course Syllabus

BIG HORN COUNTY SCHOOL DISTRICT #1

Program Name	WYCA	Content Area	Vocational Education
Course ID	CAOT79043	Grade Level	9, 10, 11, 12
Course Name	Java Programming I	# of Credits	0.5
SCED Code	10155G0.5011	Curriculum Type	Connections Academy

COURSE DESCRIPTION

The student explores programming fundamentals, variables and assignments, conditional expressions, selection statements, loops, arrays, methods, string manipulation, program troubleshooting, and the basics of class design, object creation, and object interaction. The student will use Oracle's Java programming language throughout this course.

WYOMING CONTENT AND PERFORMANCE STANDARDS

STANDARD#	BENCHMARK
CV12.1.1	College and career-ready students evaluate current knowledge and interests in order to set career goals.
CV12.1.2	College and career-ready students explore careers including outlook, salary, needed training, duties and lifestyle utilizing all available resources including mentors and industry experts.
CV12.1.3	College and career-ready students prepare an educational and career plan to enable them to gain desired knowledge and experience.
CV12.1.4	College and career-ready students demonstrate employability skills that enable them to be responsible and contributing citizens and employees.
CV12.2.1	College and career-ready students communicate clearly, effectively, and with reason.
CV12.2.2	College and career-ready students identify and model integrity, ethical leadership and effective management skills.
CV12.2.3	College and career-ready students work productively in teams while using cultural global competence.
CV12.2.4	College and career-ready students apply safe, legal, and responsible use of information and technology as appropriate to the task.
CV12.3.1	College and career-ready students identify and define authentic problems and significant questions for investigation.
CV12.3.2	College and career-ready students identify trends, forecast possibilities, and explore complex systems and issues.
CV12.3.3	College and career-ready students employ valid and reliable research strategies and apply prior knowledge to solve a problem or complete a project.
CV12.3.4	College and career-ready students demonstrate creativity and innovation while considering the environmental, social, and economic impacts of decisions.
CV12.4.1	College and career-ready students produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (*CCSS W.11.4)
CV12.4.2	College and career-ready students determine the meaning of symbols, key terms, and other content-specific words and phrases as they are used in technical context. (*Adapted from CCSS RL.9.11)
CV12.4.3	College and career-ready students acquire, manipulate, analyze, diagnose, and/or report information, using the appropriate technology.
CV12.4.4	College and career-ready students precisely follow a complex multistep procedure when performing technical tasks. (*Adapted from CCSS RL.9.3)
CV12.5.1	College and career-ready students manage resources to develop, analyze, and implement systems and applications.
CV12.5.2	College and career-ready students productively complete tasks taking constraints, priorities and resources into account.
CV12.5.3	College and career-ready students safely and ethically use current industry-standard tools and emerging technologies.
CV12.5.4	College and career-ready students utilize technology to develop innovative solutions or products.

SCOPE AND SEQUENCE

UNIT OUTLINE	STANDARD#	OUTCOMES
<p>Java Programming I</p> <p>The student explores programming fundamentals, variables and assignments, conditional expressions, selection statements, loops, arrays, methods, string manipulation, program troubleshooting, and the basics of class design, object creation, and object interaction. The student will use Oracle's Java programming language throughout this course.</p>	<p>CV12.1.1, CV12.1.2, CV12.1.4, CV12.2.1, CV12.2.4, CV12.3.2, CV12.3.4, CV12.4.1, CV12.4.2, CV12.4.3, CV12.4.4, CV12.5.1, CV12.5.2, CV12.5.3, CV12.5.4</p>	<ul style="list-style-type: none"> • Discuss basic computer terms and concepts • Describe the evolution of modern programming languages • Define API, JDK, IDE, and other key terms related to Java programming • Identify common uses for the Java programming language • Recognize key syntactical elements in Java • Configure a programming environment using an IDE and the Java Development Kit • Write, compile, and execute a simple Java program • Understand proper programming style and documentation • Identify syntax, runtime, and logic errors • Obtain user input using the Scanner class • Use variables and constants to store data • Apply Java™ naming conventions to variables, constants, methods, and classes • Identify numeric literals • Write Java programs that perform simple arithmetic calculations • Evaluate expressions and operator precedence • Use augmented assignment, increment, and decrement operators • Cast the value of one primitive type to another • Integrate escape characters into text • Understand the char type, String type, and string concatenation • Declare boolean variables and identify boolean literal values • Interpret and construct Boolean expressions using comparison operators • Implement selection control using if statements, if-else statements, and nested if statements • Evaluate and create compound Boolean expressions with logical operators • Understand and use the switch statement • Recognize the ternary operator • Identify formatted output using the printf method • Describe the syntax and uses of while, do-while, and for loops • Predict the behavior of loop code • Select and write loop statements • Explain the use of a sentinel value • Understand and implement nested loops • Explain how the use of floating point numbers can lead to numerical errors • Describe the effect of the Java™ keywords break and continue when used in a loop • Describe the syntax and structure of a Java™ method • Call methods and handle returned values • Define methods that accept input, perform tasks, and return values • Understand pass-by-value • Identify overloaded methods • Understand variable scope • Use methods of the Math class • Generate random numbers • Declare array reference variable and create arrays • Access array elements using indexed variables • Retrieve an array's size from the array • Traverse an array using an enhanced for loop • Pass array references to methods and return array references from methods • Write methods that will accept a variable number of arguments • Use methods of the Arrays class to sort, search, fill, and compare arrays • Declare reference variables for two-dimensional arrays

- Create two-dimensional arrays
- Access array elements in a two-dimensional array
- Pass two-dimensional array references to methods
- Understand the syntax for multidimensional arrays
- Describe the relationship between classes and objects
- Create objects using constructors
- Interact with objects through reference variables
- Distinguish between reference variables and primitive variables
- Write classes with instance variables and instance methods
- Distinguish between instance and static variables and methods
- Describe the effect of common Java™ access modifiers
- Explain encapsulation
- Create arrays of object references
- Compare String references and String content
- Manipulate text using methods of the String class
- Review lesson objectives and key terms
- Complete ungraded assignments for practice
- Review readings
- Explore potential careers in the field of Java programming