

ST. CHARLES NORTH HIGH SCHOOL

COURSE SYLLABUS

COURSE: Introduction to Computer Science

COURSE CURRICULUM

COURSE DESCRIPTION: The Introduction to Computer Science is a one semester long course in elective computer science classes in the Mathematics Department. Students will:

- Use the basic steps in algorithmic problem-solving to design solutions (e.g., problem statement and exploration, examination of sample instances, design, implementing a solution, testing and evaluation).
- Apply analysis, design, and implementation techniques to solve problems (e.g., use one or more software lifecycle models).
- Use developmentally appropriate, accurate terminology when communicating about technology.
- Explain how sequence, selection, iteration, and recursion are building blocks of algorithms.
- Use various debugging and testing methods to ensure program correctness (e.g., test cases, unit testing, white box, black box, integration testing)
- Implement problem solutions using a programming language, including: looping behavior, conditional statements, logic, expressions, variables, and functions.

UNITS OF STUDY:

These standards will be met through the use of Alice. Alice is an innovative 3D programming environment that makes it easy to create an animation for telling a story, playing an interactive game, or a video to share on the web. Alice is designed to be a student's first exposure to object-oriented programming. It allows students to learn fundamental programming concepts in the context of creating animated movies and simple video games. In Alice, 3-D objects (e.g., people, animals, and vehicles) populate a virtual world and students create a program to animate the objects.

In Alice's interactive interface, students drag and drop graphic tiles to create a program, where the instructions correspond to standard statements in a production oriented programming language, such as Java, C++, and C#. Alice allows students to immediately see how their animation programs run, enabling them to easily understand the relationship between the programming statements and the behavior of objects in their animation. By manipulating the objects in their virtual world, students gain experience with all the programming constructs typically taught in an introductory programming course.

TEXT: Online materials found at www.alice.org

GRADING SCALE:

90% – 100%	A
80% - 89%	B
70% - 79%	C
60% - 69%	D
59% or below	F

- **GRADING RULES:** Grades will be determined by the following:
 - o 30% - Unit Tests
 - o 10% - Projects
 - o 40% - Programming Assignments
 - o 20% - Final Exam