

Community Links High School

Exploring Computer Science

2018-2019 Syllabus

Instructor: Mr. Sidarous and Mr. Rodriguez (1st period)

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Teaching schedule: 3rd and 8th Period

We will meet in room B3 at the Spry Building.



Introduction:

Computers are ever-present in our daily lives and continue to bring us innovations and challenges personally and professionally. From the computing power in our cell phones to the personal computer used to access the Internet and do business, from microprocessors that keep our cars running efficiently to the multiprocessors that control and analyze data in hospital instruments, computers are used in practically every industry: communications, medicine, retail, manufacturing, transportation, entertainment and education. It is amazing what computers have been able to accomplish and the future will surely hold many innovations that will continue to improve our lives and the workplace. Gaining an understanding of the concepts of computer science and how these devices can be applied to solve problems is essential to building 21st century skills, productively participating in our society and becoming an effective employee.

Course Description:

CLHS Exploring Computer Science is designed for students who are curious about how computing affects their lives, want to use computers more effectively and may consider becoming technology producers. By exploring the roles we play as consumers, users and ultimately developers of technology, we will learn how computers operate, examine how new computing technologies are invented and explore major programming building blocks by creating games and animations. Throughout the course, we will work to develop problem-solving skills by learning to approach computing challenges systematically and become more comfortable trying out new computer tools. We will also uncover a variety of different things programmers and computer scientists do by exploring research projects, meeting industry professionals and reading about interesting sub-fields. Understanding who technologists are and how they work is important for everyone as more and more jobs involve computing technology. In addition to these skills and knowledge, this class will teach students safe, legal and ethical behavior to be a good digital citizen.

Next Generation Science Standards:

- HS-ETS1-1 : Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
- HS-ETS1-2 : Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
- HS-ETS1-3 : Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
- HS-ETS1-4 : Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

Common Core Math Standards:

- CCSS.MATH.PRACTICE.MP1: Make sense of problems and persevere in solving them.
- CCSS.MATH.PRACTICE.MP2: Reason abstractly and quantitatively.
- CCSS.MATH.PRACTICE.MP3: Construct viable arguments and critique the reasoning of others.
- CCSS.MATH.PRACTICE.MP4: Model with mathematics.
- CCSS.MATH.PRACTICE.MP5: Use appropriate tools strategically.

Course Objectives:

Students will be able to:

- identify, discuss and assemble the major hardware and software components of a computer system
- think algorithmically and explain how a computer program processes data
- design and build small scale web sites for practical, personal, and societal purposes
- make appropriate use of powerful web 2.0 and mobile phone tools to retrieve reliable information
- design, code, test, debug and execute a program that corresponds to a set of specifications
- discuss the role of computer science in a variety of fields

Materials needed daily:

- Pencil and pen
- Journal (You can bring one of your own, or Mr. Sidarous will sell you a journal for \$1)
- Student Planner
- An open mind
- A willingness to engage and learn

There is no textbook for this class.

Homework:

Homework assignments are intended to reinforce the concepts learned in class and prepare students for examinations. Assignments may be turned in one day late, but 50% will be deducted for turning in the homework late. After one day, no late work will be accepted. Late homework will always result in an after school detention to be served that day. Students with unexcused absences will receive a zero for any assignments due that day. Students will do their homework in a binder which must be brought to class every day. Some assignments will be done in groups of 2 or 4; however each student is responsible for completing his/her own homework, in his/her own words. Any two laboratory entries with identical (word for word) entries will not receive credit for the assignment.

Units:

The units we will be studying are as follows:

Unit 1:	Human Computer Interaction	5 weeks
Unit 2:	Problem Solving	5 weeks
Unit 3:	Web Design	6 weeks
Unit 4:	Introduction to Programming	7 weeks
Unit 5:	Computing and Data Analysis	7 weeks
Unit 6:	Robotics	8 weeks

Grading:

The quarter grade will be determined using the following percentage breakdown:

Mastery: 50%	A = 100% to 90%
Homework: 15%	B = 89% to 80%
Participation: 15%	C = 79% to 70%
Growth: 10%	D = 69% to 60%
Final Exam: 10%	F = 59% and below

The quarter grade is determined by totaling all the points in each grade category and dividing by the total points possible. Keep in mind that each category is weighted using the percentage breakdowns given. For the participation grade, each student will be evaluated as to their attendance and their involvement in the class. If a student comes to class each day with no unexcused absences or tardies and participates in class discussions, they will receive all of the participation points. Students will lose points if they do not have their homework, disrupt the class, are tardy, or cut. Unexcused absences will result in an automatic zero for the day as well as for any homework due that day. Students may earn extra participation points through exemplary work and effort.

Mastery:

Mastery grades are a system of grading students based on their demonstrated level of mastery of concepts (“Essential Skills”), rather than just calculating an average based on the total number of “points” they earn in a semester. It measures demonstrated student learning, not speed of learning. At the beginning of every unit, the teacher will break down the standards for the unit into smaller objectives and criteria using a detailed rubric. During the unit, the student is assessed to see if they truly know the material using a variety of assessments, such as traditional pencil-and-paper tests, projects, discussions, or reports. The class grade will be based on all of the evidence the teacher collects demonstrating mastery of the essential standards. The goal of this approach is to provide the teacher, student, and parent as accurate a picture as possible of the student’s learning and to encourage a dialogue about how the student can master the material for the class. In particular, because learning is a process that takes place over time, each assessment will provide feedback for the student about what to focus on next, and the student will be allowed to retake assessments. If the new assessments shows a higher level of mastery, that new score replaces the old one.