

# Course Syllabus and Information for BHC



Course Title: Principles of Computer Science Part 1 (Fall 2019)

Teacher: Stuart R. Brockwell

Grade range: 10-12 (9th by request)

Day(s) of the Week: Thursday Times: 8:30am - 10:00am

Minimum Number of Students required for class: 9 Maximum accepted: 16

Credit Level (high school): Half Credit  Full Credit

## Credit Determination:

**½ Credit Course:** Classes must meet a minimum of 16 weeks and contain 70 hours of course contact time which includes class meeting times plus at home assignments.

**1 Credit Course:** 32 weeks and 140 hours of course contact time which includes class meeting times plus at home assignments.

## Costs

Total Tuition: \$250

- Deposit of \$50 secures student's spot in class (included in total cost).
- Remaining balance of \$200 to be paid on the first day of class in August or split into two payments of -- each which is due on the first day of class in August and in January.

Sibling Discount: Yes  No

Amount of sibling discount (if applicable): \_\_\_\_\_

Payment Methods Accepted: Venmo  Paypal  Check/Cash

Payment Information: Venmo only for convenience and security. @SurgeTechnologies

## Course Description

The modern world is saturated with technology-- today there's hardly any walk of life that isn't affected by it in some form. This course strives to explore the foundations of computing as a science, and how it effectively merges the physical sciences of mathematics and engineering. It will seek to illustrate how computers operate based upon the simple principles of logic and abstract ideas, as well as to highlight the similarities and differences between how computers "think" in comparison to how humans "think." To support these goals, the course will include the following "modules" throughout the semester. They include, but are not limited to:

1. What is "Computer Science?" (computing as a science, the OSI model, etc.)
2. The History of Computer Science (major people, companies, and advancements)
3. Hardware (what defines a computer, what composes it, what each part does)
4. Software (what are "apps," how programming works, Major Operating Systems, etc.)
5. Current Topics (Artificial intelligence, Social Media, Hacking, etc.)

## Course Requirements or Prerequisites

### Computer Literacy:

Students should have basic computer skills such as file/folder manipulation, Word/Excel usage, internet research, etc..

### Sciences:

Students should have a strong understanding of the physical sciences. This course will build upon existing knowledge of electricity, atoms, molecules, and elements.

### Mathematics:

Students should understand up to basic Algebra and be able to perform simple equations.

### Academic Ability:

This course is designed for students who are self-motivated and are capable of working both independently and with groups. Before being accepted into class, parents are requested to contact sbrockwell@surgetechnologies.net in order to receive additional details about the class and to set up a brief phone conversation.

## Student Responsibilities

There will be a heavy emphasis on hands-on experience and in-class activities. Students will be required to ask questions and participate in group conversation. Tests and quizzes will involve some memorization of facts, but will largely center around the understanding of concepts rather than blunt memorization. Homework will vary based on the current topic, but will require online research. Students will also participate in a major group project and presentation towards the end of the semester.

## Tests and Grades

The course will include occasional quizzes, as well as a standard midterm and final. There will also be one major group project that will take place near the end of the year. This project will involve students working in teams to create, develop, and present a business-style PowerPoint presentation in front of the whole class.

## Textbooks Required

No textbook required. Every class will be recorded and uploaded to YouTube for students to use as a resource for review and study. For anyone concerned about privacy, rest assured that these videos will be marked as "private," and will not be searchable or accessible without the unique URL that I post in Google Classroom. There will be a \$25 fee due on the last day of class to cover the computer building project. (see below)

## Supply list

- A laptop or portable computer running Windows 7 or later, or a Mac running MacOS version 10.9 (Mavericks) or later. Contact me for more information or questions.
- Office software (Microsoft Office, OpenOffice, Google Docs.)
- A notebook or non-digital means of taking notes.
- Internet Access at home for the purposes of research and group activities

## Teacher Biographical Information

Stuart Brockwell is the owner and head technician of Surge Technologies, LLC., an IT firm operating in Birmingham. He is a former homeschool student and was taught by many of the teachers here at BHC. In 2015 he graduated Cum Laude at Samford University with a Bachelor's in Computer Science and a focus in Business.

## Teacher Contact Information

Call/Text: 205-434-1788

Email: sbrockwell@surgetechnologies.net

## Additional Information

My Goal:

By the end of the course, my desire is that students will walk away with a greater understanding of computers and the science behind them, as well as a greater appreciation for God and His infinite wisdom and power. Even through the collective millions of hours of research and development that have brought technology to where it is today, we cannot even begin to come close to the majesty of God's creation.

Computer Building Competition:

On the last day of class, I will host a computer-building competition. Students will compete against each other to assemble a working computer from raw parts as quickly as they can. The top three best times get to keep the computer that they build, too! This is an activity where everyone will get real, hands-on time working with computer hardware which, in my mind, is an invaluable experience.