Discover IT

Syllabus

What is it like to be an Information Technology (IT) professional?
This course will show you:

- What IT professional actually do
- What it is like to write a program
- How to build and publish a basic web page
- How to create interesting apps for your phone
- The traits you need to be a programmer
- What college degree options are available
- Where technology is the key to many different career fields

This course uses up-to-date teaching techniques allowing you to learn by reading, listening, experimenting, and writing your own code. Each module has specific learning activities designed to help you learn in an interesting and fun manner.

Course Details

	High School	South Central College
Course Title	Discover IT	COMP1120 - Foundations of Computing
Credits	.5 high school credits	4 college credits
Description	This course will help you discover the field of Information Technology (IT). The learning activities and project work emphasize time management, problem solving, and professional communications.	
Prerequisite:	None	
Format:	Online http://www.SocratesOnline.org/	
Weekly work time:	15-20 hours (approximate)	

Textbook
Proposed Interactive Textbook: Computing Technology for All.

Required Software:

- **A text editor with text color-coding**
  - Windows: NotePad++
  - Mac: Text Wrangler
  - Windows, Mac, and Linux: Atom Text editor.
- **Web Browsers**
  - Google Chrome
  - FireFox
- **Register at https://www.typing.com** for the weekly keyboard challenges.

Course Goals

1. **Discover the excitement of IT.** Technology is everywhere. This course will show you some of the exciting things you might pursue, emphasizing using technology in the career field that you are passionate about.
2. **Solve problems.** Learning how to communicate complex ideas and how to break down problems into logical pieces.
3. **Communicate as a professional.** Speaking with precision, writing in a professional manner, and being able to listen.
4. **Demonstrate successful time management.** Complete projects early or on time based on client specifications.
5. **Improve your typing speed** by 50% or more by the end of the course.

Student Learning Outcomes

Examine the role of Information Technology in an organization

- Explore the history of computing.
- Describe the organization of an IT department.
- Explore career options available to the IT professional.

Identify hardware and software platforms used in business.

- Explore various hardware platforms used in an organization. (Operating systems, hardware networks, computing systems such as mainframe, mid-range, or network)
- List various software categories found in an organization. (decision support, enterprise resource planning [ERP], content management systems (CMS), Customer Relationship Management (CRM).
- Differentiate between operating systems and application software.
- Examine issues of software licenses and open source software

Explore emerging technologies in IT

- Analyze different aspects of cloud computing.
- Compare mobile computing technologies with desktop usage.
- Examine green computing concepts.

Create static web pages

- Create a web page using the essential HTML elements in the correct order.
- Establish a workflow using a standard text editor and a browser using hotkeys.
- Incorporate images, lists, and links on a web page.
- Style web pages using cascading style sheets (CSS).

Leverage file management techniques.

- Create a hierarchical folder structure.
- Organize files within the folder structure.
- Copy, move, delete, and rename files and folders.
- Utilize both GUI and command line interfaces to work with files.
- Write PATH statements to access files anywhere on the file system.

Work with different numbering systems.

- Demonstrate the relationship between binary, decimal, and hexidecimal numbers.
- Analyze why a specific numbering system is used in different circumstances (For example, inside a computer, specifying a color on a web page, calculating your grade.)
- Perform conversions between binary, octal, decimal, and hexidecimal systems.

Examine data management.

- Discuss the hierarchy of data.
- Compare various database systems (Excel, DBMS, MongoDB, JSON).
- Describe the use of data warehouses and data mining in an organization.

Explore ethical issues in computing

- Examine issues relating to privacy.
- Examine issues related to computer crime.
- Explain the differences between copyright and creative commons licensing.

Discuss types of programming languages.

- Summarize the evolution of programming languages.
- Identify the distinguishing characteristics of common programming languages in use today.
- Analyze the advantages and disadvantages of the different types of languages (assembly, procedural, object-oriented, declarative).

Analyze various syntax and semantics of various programming languages.

- Demonstrate the use of variables.
- Demonstrate why different data types are important.
- Write a program using if/else and looping statements.
- Write and test a program based on an algorithm.
- Analyze the different languages you've worked in showing their pros and cons

Employ algorithms and flow charts to visualize and solve programming challenges.

- Demonstrate how to use an algorithm to problem solve.
- Demonstrate the difference between an algorithm and a flow chart.
- Create algorithms to solve simple problems.
- Analyze an algorithm's correctness and efficiency.

Write a program using a scripting language such as JavaScript.

- Write and run a JavaScript function.
- Write a JavaScript function that collects information from the user.
- Write a JavaScript function that displays information on a web page.
- Write a JavaScript function that runs only on certain conditions.

Write a program using a compiled language such as Java

- Write, compile, and run a Java program.
- Write a C program that collects information from the user and displays a result.

Write a server-side program such as PHP.

- Write a program that interacts with the user, building an inventory system.

Write a simple program using assembler language.

- Write, compile, and run a program that outputs a phrase such as "Hello Worlds!"

Expectations

1. **You are responsible for your own actions** (and inactions).
2. **Do the work.** It is expected that you have done all of the Learning Activities. Be smart and set up a regular study schedule as if you were attending a face-to-face class. The learning activities are presented in a progressive order. Complete them in order because they build on each other. (Please, do not try to complete this course by trying to learn everything in a single day or two.)
3. **Meet the deadlines.** Use an application such as Asana (https://asana.com) to remember what needs to be done and when.
4. **Understand that learning is moving out of your comfort zone.** Learning is about change and change means being willing to move into new areas you haven't explored before both emotionally and technically.
5. **Communicate as a professional.** In the professional world you are judged by your emails.
    - Always write using proper grammar and spelling. Use an app such as Grammarly (ttps://www.grammarly.com) is highly recommended.
    - Use paragraphs to make your writing more readable.
    - Format your content using headlines, bold text, and hyperlinks.
    - When sending emails, be smart and always include a copy of your code (as a zip file) as well as any screenshots or graphics that will clarify what you need.
6. **Stay connected.** Have all your csp.edu emails forwarded to your personal email address and check your email at least once each day. Install the Slack app on your smartphone and monitor the communications especially in the #general channel.

Course Policies

Deadlines
Projects: Build on the bonus points by turning in projects early. There is also a 48-hour window (with a 20% penalty) after the due date. After that no projects are accepted.

Quizzes: You have one week to take each graded quiz. Miss that huge window of opportunity and you have lost out on those points. There will be no makeup opportunities at the end of the semester.
Due to the time-relationship between the self-quizzes (as learning activities) and the graded-quizzes (as assessment activities) there will be no graded quizzes allowed after the established deadline.

Cheating
All graded projects must be your own work. Cheating or plagiarism is a serious breach of academic ethics and could lead to sanctions including expulsion from college. When taking tests, protect your answers from others. If cheating is discovered, all participants will be penalized. Don't be a victim. If someone asks for help on a graded project just say "no" or offer to help them using the learning activities that are not graded.

Special Needs
If you have a disability and need accommodations to participate in the course activities, please contact the academic support services person for your school.
The materials in this course including videos, tutorials, and other learning tools have been written to be accessible to all students.

The Bottom Line
I am here to help you learn and understand the material presented in this course. Please let me know if you do not understand any concepts or projects in this class. Feel free to clarify any questions you may have during class, at my office, or via email. I am also open to any suggestions you may have that would make this course more interesting and/or useful.

Your Instructor

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