

TECHNOLOGY-12/13

SELECTIVE UNIT 16 (S16)

(Programming II)
(July 2017)

Unit Statement: Almost one million programming jobs currently go unfilled in the United States alone. The need for basic "code" literacy is spreading across many career fields, and the trend will only continue. Luckily, technology giants including Google, Microsoft, and Facebook have invested heavily in building "code literacy" resources for beginners. Instructors with no experience can easily teach programming with the resources provided.

While it provides the student with the techniques necessary to write well-documented, structured computer programs. Examples involving if-then statements, repetition, arrays, functions, and records will be used. The unit is designed to promote good programming practices and to introduce a student to the joy and self-confidence developed in building valid program code.

There is a large variety of suitable programming platforms and languages available to use during this unit. A choice should be made based on the experience of the teacher and/or interest of the student.

Essential Outcomes: (must be assessed for mastery)

1. **The Student Will** write well-documented, structured code.
2. **TSW** use correct syntax and code structure to execute designed tasks.
3. **TSW** execute specific lines of code and manipulate the code to create a desired effect.
4. **TSW** design a program with a specific purpose, and create this program to meet or exceed their designs.
5. **TSW** utilize dynamic coding to take user input to generate system output.
6. **TSW** demonstrate their understanding of file structure and format, as well as how to run the programs they have made on a computer.

Software/Resources:

Novice

These four websites provide self-directed programming units that start from the very beginning to the very advanced.

<https://www.khanacademy.org/computing/computer-programming>

<https://www.codecademy.com/>

<https://code.org/>

<https://scratch.mit.edu/>

Experienced

These three websites provide self-directed programming units that are directed at students with programming experience.

<http://snap.berkeley.edu/>

<https://www.w3schools.com/>

<http://codingbat.com/java>

This website describes the internal parts of the computer.

<http://computer.howstuffworks.com/computer-hardware-channel.htm>

This website describes the information processing cycle.

http://wikieducator.org/Block_diagram_of_computer

Destiny Webpath Express (found on QSI schools Library site) use this search engine to find age-appropriate websites that align with this unit.

ASSESSMENT RUBRIC FOUND ON FOLLOWING PAGE.....

Assessment Rubric – S16 – Programming II

Student Name: _____ Date: _____

To receive a 'B' the student must show 'B' level mastery on ALL Essential Outcomes. (TSW's)

To receive an 'A', the student must show 'A' level mastery on 4 available and 'B' level mastery on all remaining TSW's.

TSW	'A' Level Mastery	'B' Level Mastery	'P' Comments
1. Write well-documented, structured code.	Inclusive and error free code is produced with appropriate commentary regarding purpose and or variable aspects of the code.	Be able to produce a basic code structure with some documentation as to its purpose and effects.	
2. Use correct syntax and code structure to execute designed tasks.	Use correct syntax and code structure to execute advanced designed tasks in an elegant manner.	Use correct syntax and code structure to execute designed tasks.	
3. Execute specific lines of code and manipulate the code to create a desired effect.	Execute specific lines of code and manipulate the code to create a desired effect in an efficient way.	Execute specific lines of code and manipulate the code to create a desired effect	
4. Design a program with a specific purpose, and create this program to meet or exceed their designs.	Employs advanced code arrangement, creating an elegant program. Demonstrates ability to pinpoint minor and major mistakes in own code and that of others.	Employs code combinations creating a functioning program. Demonstrates ability to find major mistakes in own code.	
5. Utilize dynamic coding to take user input to generate system output.	Exceptional ability to use I/O and navigational functions. Creating a smooth experience for users. Problem solves on his/her own.	Uses I/O and navigational functions to create a functioning user experience. Needs some help solving problems.	
6. Demonstrate their understanding of file structure and format, as well as how to run the programs they have made on a computer.	Appropriately arranges files for functional interoperation which is logical and transportable. Avoids special characters and spaces in file names.	Appropriately arranges files for functional interoperation which is logical and transportable.	