

## CS 1301 – Introduction to Computing

### Purpose:

The purpose of this course is to give students an introduction to computer programming. Students will gain experience and practice with logical thinking and debugging. The focus in the course is on developing skills and experience in software development and use of software tools. No prior CS coursework is required.

### Outcomes:

**(Competency)** Able to write short programs (functions or scripts) (< 100 lines of code), using iteration, conditionals and simple sequential data structures (e.g. arrays, lists, strings)

**(Competency)** Able to write programs that use dictionaries (hashtables)

**(Competency)** Able to write recursive solutions to mathematically recursive problems and non-mathematical problems

**(Competency)** Able to use abstraction in problem solutions by writing programs that make calls to other user-defined functions

**(Competency)** Able to work with strings

**(Competency)** Understand runtime user input versus parameters

**(Competency)** Understand function return versus print of results

**(Competency)** Apply knowledge of primitive types such as the difference between integer and floating point for calculations

**(Competency)** Able to use incremental development and basic debugging techniques such as print statements in the detection of errors in debugging incorrect programs

**(Competency)** Able to track variable values by tracing execution of a program

**(Competency)** Apply knowledge of basic complexity (Big – O) to calculate the runtime requirements given for common searching and sorting algorithms

**(Competency)** Able to use object-oriented programming through the use dot notation

**(Competency)** Understand binary numbers in conjunction with Unicode and ASCII, RGB, etc.

**(Competency)** Able to convert between binary and base 10

**(Movement)** Demonstrate basic competence in commonly used office productivity applications (e.g. word processing, presentation and spreadsheet software)

**(Accomplishment)** Write functions that read data from the console (user) and display results to the console

**(Accomplishment)** Write functions that read data from a file and write data to a file

**(Accomplishment)** Write functions that read data from a network connection (URL) to process information from a web page

**(Accomplishment)** Write functions that read and possibly manipulate files and folders by interacting with operating system commands

**(Competency)** Understand common searching (i.e. sequential/linear search, binary search) and sorting algorithms (i.e. selection sort, quick sort)