

## Based on ABET ETAC Student Learning Outcomes

**1. Course Number and Name:**

CSET 1100 Introduction to Computer Science & Engineering Technology

**2. Credits and Contact hours:**

Credits: 3 hours, Contact: 3 lecture hours

**3. Instructor's or course coordinator's name:**

Jared Oluoch

**4. Text book, title, author, and year:**

Introduction to Programming Using Python, Y. Daniel Liang, 2012

**a. Other supplemental materials:**

None

**5. Specific Course Information:**

**a. Brief description of the content of the course (catalog description):**

This three semester hour course is the first course in computer hardware and software for CSET majors. Single and multi-user operating systems, command-line processing, program planning and creation and simple Internet tools are covered.

**b. Pre-requisites, or co-requisites:**

MATH 1330

**6. Specific goals for the course:**

**a. Specific outcomes of instruction:**

1. Describe the fundamentals of computer history, hardware, software and OS.
2. Connect from a remote location to a UNIX server on which they have an established shell account.
3. Transfer files to and from a PC or Mac to their account on a UNIX server.
4. Use the UNIX "man" pages to determine the proper syntax for user-level UNIX commands.
5. Manage their file system on a UNIX server.
6. Create technical and simple game programs using the Python programming language.
7. Debug and test programs.
8. Describe issues related to user interfaces and user friendliness.
9. Describe and implement the data structures available in the Python programming language.
10. Design simple algorithm using pseudocode and/or a flowchart.
11. Create programs that implement a variety of common algorithms using the Python programming language.

**b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course: n**

n. The ability to analyze, design, and implement hardware and software computer systems.

**7. Brief list of topics to be covered:**

1. History of Computing
2. Overview of OS (Unix as example)
3. Introduction to net centric computing (FTP,SSH etc)
4. Machine level representation of data
5. Assembly level machine organization
6. Overview of Programming Languages
7. Procedure Development: Pseudocode, Flowcharting & Control Structures
8. The process and mechanism of creating a program
9. Program environment, tools
10. Intro to Python: Basic Programming structure
11. Basic Syntax, Variable declaration, I/O
12. Basic Operators, Expression evaluation, Priority, casting
13. Introduction to the gcc for compiling C program code
14. Block statement, Python Flow Control: Branching
15. Looping, break, continue, sentinel
16. Abbreviations, Characters conversion
17. Debugging and testing, error and handling
18. Library, Function
19. Scope of variables, parameter passing
20. One-Dimensional Arrays, searching, summing, etc.
21. String and operations
22. Properties of good software design, user friendliness
23. Higher-Dimensional Arrays
24. Typedef, structures
25. Text File Processing
26. Software requirements, validation and verification
27. Problem solving using algorithm, simple algorithm
28. Sequential and binary search
29. Quadratic Sorting algorithms
30.  $O(N \log N)$  sorting