

COMP 164
Essentials of Computer Science
Fall 2011

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Office Hours: Monday 11:30 – 1:20, 2:30 – 3:20
Tuesday 10:30 – 12:00
Wednesday 11:30 – 1:20, 2:30 – 3:20
Thursday By Appointment
Friday 11:30 - 1:20

During these times I will try to always be in my office or nearby. You are also welcome any other time I'm in my office. Special appointments may be arranged as well.

Text: Kenneth A. Lambert, *Fundamentals of Python: From First Programs through Data Structures*, Course Technology, 2010.

Objectives: To learn how the various components of a computer system interact and to learn how software manipulates hardware. Upon completion of the course you should be able to represent data in binary and hexadecimal, construct simple components from logic gates, have a working knowledge of the fundamental hardware components of a typical computer system, articulate the fetch-execute cycle and be able to understand and write simple programs.

Structure: To learn how the various components of a computer system interact and to learn how software manipulates hardware. Upon completion of the course you should be able to represent data in binary and hexadecimal, construct simple components from logic gates, have a working knowledge of the fundamental hardware components of a typical computer system, articulate the fetch-execute cycle and be able to understand and write simple programs.

Exams: We will have 2 exams during the course, a midterm and a final. We will also have 4 quizzes. The quizzes will be short (3-4 questions / 15-20 minutes) covering the most recent topics. The exams and quizzes will be designed to reinforce the material presented in the lecture as well as evaluate your mastery of it.

Homework: You will be given a variety of homework assignments throughout the semester. Many of them will involve using the computer to implement methods discussed in class. You will usually have at least two or three days to work on them. Due dates for the homework assignments will be announced when they are given. Assignments must be turned in at the beginning of class on the day due. A penalty of 15% per class period will be assessed on late assignments.

Grades: Final grades will be based on the following percentages.

Quizzes	15 – 20 %
Labs and Homework	25 – 30 %
Midterm	20 – 25 %
Final	20 – 25 %
Attendance and Participation	0 – 5 %

Attendance: You are expected to attend each class. Your attendance portion of your grade will be the percentage of classes you attend. If you must miss a class for any reason, you are responsible for any material covered in your absence. There will be no make-ups of missed daily quizzes. If you **MUST** miss a quiz or an exam you will need to make arrangements **BEFORE** the next class period to schedule a make-up.

Academic Dishonesty:

Acts of dishonesty will be handled in accordance with SMSU's academic dishonesty policy. While you are encouraged to collaborate when working on homework assignments, you should not share your finished work with someone else nor ask someone else to share theirs with you.

Semester Schedule (Tentative)

This outline is only meant as a rough guide for the semester. Some topics listed may be abbreviated or eliminated. Additional topics may be introduced. The material covered for each topic, the exact nature of the assignments and the pace of the course will be dependent on the overall progress of the class.

- I. Introduction (2 days) **(Ref: Notes and handouts)**
A. What is a computer system?
B. Hardware components.
C. Basic system organization.
- II. Data Representations (1.5 weeks) **(Ref: Notes and handouts)**
A. Binary and hexadecimal number systems
B. Representing unsigned integers
C. Representing signed integers – two’s complement
D. Floating-point numbers – IEEE standard
E. Characters – ASCII, Unicode
- III. Introduction to Python Programming (1 week) **(Ref: Lambert, Chapters 1 and 2)**
A. Simple I/O
B. Assignments
C. Arithmetic
- Quiz 1**
- IV. Basic Processor Organization (1 week) **(Ref: Notes and handouts)**
A. Components of the CPU
B. The Fetch-Execute Cycle
C. Introduction to PEP/8
- V. Introduction Digital Circuits and Boolean Algebra (3 weeks) **(Ref: Notes and handouts)**
A. Boolean algebra
B. Basic gates
C. Combinational circuits
D. Sequential circuits
- VI. Introduction to Branching (1.5 weeks) **(Ref: Lambert, Chapter 3)**
A. IF – ELSE conditional statements
B. Boolean operations
- Quiz 2**
- Exam 1**
- VII. Introduction to Loops (3 weeks) **(Ref: Lambert, Chapter 3)**
A. Repetition with FOR loops
B. Repetition with WHILE loops
C. Branching and loops in PEP/8
- VIII. Introduction to Algorithmic Design (2 days) **(Ref: Notes and handouts)**
A. What is an algorithm?
B. Expressing algorithms in pseudocode
C. Algorithms as program documentation
- Quiz 3**
- IX. Programming Topics (3 weeks) **(Ref: Lambert, Chapters 4 and 5)**
A. Functions
B. Strings and lists
C. Searching and sorting

Quiz 4

Final Exam The final is scheduled for 2:00 PM, Monday, December 12, 2011. Make your travel plans accordingly.

Lab Schedule (Tentative)

This schedule is tentative. There will generally be an assignment associated with each lab. The assignments will be posted on the course site on D2L.

Date	Activity
8/23	Classroom
8/30	Classroom
9/6	Lab - UNIX intro and new accounts
9/13	Lab - Intro to Python, Program 1
9/20	Lab - Python, Program 2
9/27	Lab - Intro to PEP/8
10/4	Lab - Intro to TkGate
10/11	Lab - Adder
10/18	Classroom - Mid-Term Exam
10/25	Lab - Python, Program 3
11/1	Lab - Python, Program 4
11/8	Lab - Python, Program 5
11/15	Lab - Python, Program 6
11/22	Lab - Python, Program 7
11/29	Lab - Python, Program 8
12/6	Lab - Python, Program 9