

CS 160

ORIENTATION TO COMPUTER SCIENCE

Summer 2021

INSTRUCTOR: Sisi Virasak

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Office Hours: By appointment

COURSE DESCRIPTION: CS160 introduces the field of computer science and programming. It covers binary encoding of data, logic, computer organization, operating systems, programming languages, algorithms, software engineering, and data and file organization.

PREREQUISITE: MTH 075 Variables and Linear Equations with a grade of "C" or better. Recommended: Concurrent enrollment in CS 120 Digital Literacy.

TEXT BOOK: OER textbook provided in Moodle (elearning.linnbenton.edu)

MATERIALS: Internet access and USB Key/Flash Drive/Thumb Drive.

COURSE OBJECTIVES: On completion of this course, students will be able to:

- 1) Understand the concept of abstraction.
- 2) Understand the representation of numbers and perform conversions between the binary, decimal and hexadecimal number systems.
- 3) Understand the science and role of algorithms in the field of computer science.
- 4) Write and interpret short machine code expressions.
- 5) Write algorithms in pseudo code and a programming language to solve given problems
- 6) Describe in detail the duties and functions of an operating system.
- 7) Describe basic variable types and data structures
- 8) Describe the various differences between object oriented and procedural/traditional programming languages.

GRADING: Final grades will be assigned based on the percentages of the weighted total points.

		90%-100% ...A
Assignments & labs	15%	80%-89%B
Quizzes	25%	70%-79%C
Project I	30%	60%-69%D
Project II	30%	below 60% ..F

The LBCC community is enriched by **diversity**. Each individual has worth and makes contributions to create that diversity at the college. Everyone has the right to think, learn, and

work together in an environment of respect, tolerance, and goodwill. (related to board policy #1015)

COURSE REQUIREMENTS:

QUIZZES:

- a) Missed quizzes cannot be made-up without instructor consent **PRIOR** to the quiz.
- b) The lowest quiz score will be dropped.
- c) **NO MIDTERM EXAMS or FINAL EXAM WILL BE GIVEN** - weekly quizzes will take the place of midterms and two individual projects will be given in place of the final.

HOMEWORK:

- a) All assignments must be uploaded into Moodle before the due date. All assignments **MUST** be clearly written or typed. Acceptable file extensions are .doc/.docx or PDF.
- b) Assignments will lose 10% for each day being late and ***will not be accepted*** more than one week after the due date.
- c) The lowest assignment score will be dropped.
- d) Please **SHOW YOUR WORK** on all mathematical calculations.

HOMEWORK/QUIZZES:

If you know that homework and quiz will not be turned in on time email instructor before due date.

INDEPENDENT WORK:

All students are encouraged to discuss assignments and course materials in general terms with other students. However, each student is expected to work independently on all assignments. The work you turn in to be graded must be *your own* work. If you need help with exercises, see the instructor for further assistance and guidance. The penalty for turning in work done by another student will range from a 0 grade on the assignment to a failing grade in the course.

TUTORS: Tutors are usually available for this and other computer science classes. Check with the instructor and/or the Learning Center if you feel you need further assistance with this course.

OFFICE of DISABILITY SERVICES:

Students who may need accommodations due to documented disabilities must **speak with the instructor during the first week of class**. If you have not accessed services and think you may need them, **please contact Disability Services, 541-917-4789**. If you have documented your disability, remember that you must complete a Request for Accommodations form every term in order to receive accommodations.

STUDENT RIGHTS & RESPONSIBILITIES: All students are expected to be familiar with the Student Rights and Responsibilities handbook, and to follow the conduct guidelines outlined. The handbook can be found on the LBCC Website, under Students/Students Rights.

COURSE OUTLINE AND SCHEDULE

(subject to change during the term)

Week 1	Monday 28 June 2021 – Sunday 04 July 2021
<p>The Evolution of Computers: Contributions and Pioneers of Computing History, Computer Generations</p>	
<p>Reading: Chapter 0, Chapter 1</p>	
<p>Assignment Due: #1 – 04 July 2021</p>	<p>Quiz:</p>
Week 2	Monday 05 July 2021– Sunday 11 July 2021
<p>Data Storage: The Binary Number System, Bit Shifting and Rotating, Negative Numbers: Two's Complement and Excess Notation, Binary Fractions, Floating Point</p>	
<p>Reading: Chapter 1</p>	
<p>Assignment Due: #2 – 11 July 2021</p>	<p>Quiz: #1 – 11 July 2021</p>
Week 3	Monday 12 July 2021– Sunday 18 July 2021
<p>Data Storage (continued): Hexadecimal Number System, Mass Storage</p>	
<p>Reading: Chapter 1, Chapter 2</p>	
<p>Assignment Due: #3 – 18 July 2021</p>	<p>Quiz: #2 – 18 July 2021</p>

Week 4

Monday 19 July 2021 – Sunday 25 July 2021

Machine Language:

Machine Language, CPU Architecture, The Instruction Cycle, Machine Instructions, Programs and Data
Lab #1

Reading: Chapter 2

Assignment Due:
#4 – 25 July 2021

Quiz:
#3 – 25 July 2021

Week 5

Monday 26 July 2021– Sunday 01 August 2021

Operating Systems:

History of Operating Systems, Components of an Operating System, File Systems, Security
Lab #2

Reading: Chapter 3, Chapter 4

Assignment Due:
#5 – 01 August 2021
Lab #1 – 01 August 2021

Quiz:
#4 – 01 August 2021

Week 6

Monday 02 August 2021– Sunday 08 August 2021

Algorithms:

Representation of Algorithms, Algorithmic Structures, Algorithm Efficiency, Big-O Notation

Reading: Chapter 4, Chapter 5

Assignment Due:
#6 – 08 August 2021
Lab #2 – 08 August 2021

Quiz:
#5 – 08 August 2021

Week 7

Monday 09 August 2021– Sunday 15 August 2021

Introduction to Python:

Intro to Python, Hello World!, Basic Arithmetic and Strings, Variables, Booleans, The If-Else Statement and Conditions, The While Loop, Functions

Reading: Chapter 6

Project I: Python Programming

Assignment Due:
#7 – 15 August 2021

Quiz:
#6 – 15 August 2021

Week 8

Monday 16 August 2021– Sunday 22 August 2021

Software Engineering:

Software Development and Product Life Cycle, Documentation, Software Licensing

Reading: Chapter 7

Assignment Due:
#8 – 22 August 2021

Quiz:
#7 – 22 August 2021

Week 9

Monday 23 August 2021 – Sunday 29 August 2021

Project II: Can you read code? Find and explain the errors.

Assignment Due:
#9 – 29 August 2021
Project I: Python Programming – 29 August 2021

Quiz:
#8 – 29 August 2021

Week 10

Monday 30 August 2021-Thursday 02 September 2021

Project II: Can you read code? Find and explain the errors.

Assignment Due:

Quiz:

Project II Due:
02 September 2021 – 11:59 PM