CS 160

Orientation to Computer Science Fall 2019

Instructor: Sisi Virasak

Office: MKH – 108   **Email**: virasas@linnbenton.edu   **Phone**: 541-917-4617

Office Hours: Monday   →   10:00 – 12:00

Wednesday   →   10:00 – 12:00

Thursday   →   10:00 – 11:00

Class Location: MKH – 101

Class Hours: Tuesday/Thursday → 8:00 – 9:50

Start Date: 01 October 2019
Final Date/Time: 10 December 2019 → 7:30 – 9:20

Course Description: Introduces the field of computer science and programming for students interested in careers in related fields. Covers digital logic, binary and hexadecimal encoding of data, computer organization, operating systems, algorithms, control structures, and an overview of programming languages and pseudo-code. Computing's impact on culture and society is a recurring theme throughout this course.

Prerequisites: MTH 075 Variables and Linear Equations with a grade of "C" or better.

Recommended: Concurrent enrollment in CS 120 Digital Literacy.

Textbook: Will use provided reading materials.

Materials: Internet Access

USB Flash 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.

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

Class Participation:	10% 90 - 100%	→	A
Assignments & Labs: 25% 80 – 89%		→	B
Quizzes:	25% 70 – 79%	→	C
Python Project:	20% 60 – 69%	→	D
Robotics Project:	20% 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

Homework:
i.   All assignments must be uploaded into Moodle before the due date. All assignments <u>MUST</u> be typed, using a word processor and saved as a doc/docx format.
ii.   Assignments will lose 10% for each day they are late *and* **will not be accepted more than one week after the due date**.
iii.   The lowest assignment score may be dropped.
iv.   Please show your work on mathematical calculations.

Quizzes:

    i.   Quizzes will be available online through Moodle to be completed by the scheduled date/time.

    ii.   Missed quizzes may not be made-up without instructor approval <u>PRIOR</u> to the scheduled date/time.

    iii.   The lowest quiz score may be dropped.

    iv.   There will be no midterm or final exams. These are replaced by two projects.
- Python Project
- Robotics Project

Python Project and Robotics Project:

Details may be found on the course Moodle page and will be delivered during corresponding weeks of the course.

Missed Classes – Homework – Quizzes:

In case of absence from class, students are responsible for announcements made and materials covered.

Independent Work:

All students are *highly* 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.

Cell Phones:

Cell phones can be very disruptive. If you carry a cell phone or pager, set it to vibrate, silent, or off while you are in class. No cell phones may be used during a test. If you are expecting a phone call, notify the instructor before class and step outside the classroom to conduct your conversation.

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 at 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.

Center for Accessibility Resources:

Main Office, Red Cedar Hall 105 (RCH-105)

Monday-Thursday 9:00 am - 3:00 pm

Phone: (541) 917-4789   Email: **cfar@linnbenton.edu**

Website: Center For Accessibility Resources

Students' Rights, Responsibilities, and Conduct:

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.

Website: Students' Rights, Responsibilities, and Conduct

Course Outline and Schedule

(subject to change during the term)

Week 1	Monday 30 September 2019 – Sunday 06 October 2019
The Evolution of Computers: Contributions and Pioneers of Computing History, Computer Generations	
Reading: Chapter 0, Chapter 1	
Assignment Due:	Quiz:

Week 2	Monday 07 October 2019 – Sunday 13 October 2019
Data Storage: The Binary Number System, Bit Shifting and Rotating, Negative Numbers: Two's Complement and Excess Notation, Binary Fractions, Floating Point	
Reading: Chapter 1	
Assignment Due: #1 – 08 October 2019	Quiz: #1 – 10 October 2019

Week 3	Monday 14 October 2019 – Sunday 20 October 2019
Data Storage (continued): Hexadecimal Number System, Mass Storage	
Reading: Chapter 1, Chapter 2	
Assignment Due: #2 – 15 October 2019	Quiz: #2 – 17 October 2019

Week 4	Monday 21 October 2019 – Sunday 27 October 2019
Machine Language: Machine Language, CPU Architecture, The Instruction Cycle, Machine Instructions, Programs and Data	
Reading: Chapter 2	
Assignment Due: #3 – 22 October 2019	Quiz: #3 – 24 October 2019

Week 5	Monday 28 October 2019 – Sunday 03 November 2019
Operating Systems: History of Operating Systems, Components of an Operating System, File Systems, Security	
Reading: Chapter 3, Chapter 4	
Assignment Due: #4 – 29 October 2019	Quiz: #4 – 31 October 2019

Week 6	Monday 04 November 2019 – Sunday 10 November 2019
Algorithms: Representation of Algorithms, Algorithmic Structures, Algorithm Efficiency, Big-O Notation	
Reading: Chapter 4, Chapter 5	
Assignment Due: #5 – 05 November 2019	Quiz: #5 – 07 November 2019

Week 7	Monday 11 November 2019 – Sunday 17 November 2019

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

Assignment Due: #6 – 12 November 2019	Quiz: #6 – 14 November 2019

Week 8	Monday 18 November 2019 – Sunday 24 November 2019

Software Engineering:
Software Development and Product Life Cycle, Documentation, Software Licensing

Reading: Chapter 7

Assignment Due: #7 – 19 November 2019	Quiz: #7 – 21 November 2019

Week 9	Monday 25 November 2019 – Sunday 01 December 2019

Python Project:

Work on and complete python projects.

Assignment Due: #8 – 26 November 2019	Quiz:

Week 10	**Monday 02 December 2019 – Sunday 08 December 2019**

Robotics Project:

Work in teams to develop and complete the robotics project.

Assignment Due:	Quiz: #8 – 03 December 2019

Python Project Due:
03 December 2019 – 11:59 PM

Week 11	**Monday 09 December 2019 – Sunday 15 December 2019**

Finals Week :: 10 December 2019 → 7:30 – 9:20

Present robotics projects in class