

CS 120 Introduction to Computer Programming (CNR 12814) (Fall 2021)

Contact Information

Name: Dr. Weizhong Tian
Office: JWLA 211-H
Office phone: 575-562-2339
Email: weizhong.tian@enmu.edu

Office Hours

All the office hours go through the Zoom meeting. I will be in the Zoom meeting every Monday, Tuesday, Wednesday, and Thursday 8:30AM--10:00 AM (MST), you can click the following link to join in the office hours. <https://us02web.zoom.us/j/3324604671>

You also can email me to make an appointment. I can set up a new Zoom meeting for the class if need.

Welcome to Introduction to Computer Programming! This sheet will tell you about the course, including subject matter, homework, exams, and term grade. Almost all your questions about the course can be answered by reading this handout. If anything is unclear, please do not hesitate to email me for further clarification.

Required Materials

Required Software: Python
Textbook: Python Programming: An introduction to computer science, by John M. Zelle
Wartburg College

Mediasite Lectures:

Recorded lectures are available for each section that is covered in the text. The link for access to all video lectures is given below. The lectures are titled by the section material that is covered.

Catalog Link for CS 120 Fall 2021

<https://mediasite.enmu.edu/Mediasite/Catalog/catalogs/cs-120-fall-21>

The Username and Password should be the same as you log into your Portal.

Students are expected to watch the videos for each class online and then finish the online homework on time.

Learning Outcomes

Students should be able to

1. Writing simple programming.

- To know the steps in an orderly software development process.
- To understand programs following the input, process, output (IPO) pattern and be able to modify them in simple ways.
- To understand the rules for forming valid Python identifiers and expressions.
- To be able to understand and write Python statements to output information to the screen, assign values to variables, get information entered from the keyboard, and perform a counted loop.

2. Computing with Numbers.

- To understand the concept of data types.
- To be familiar with the basic numeric data types in Python.
- To understand the fundamental principles of how numbers are represented on a computer.
- To be able to use the Python math library.
- To understand the accumulator program pattern.
- To be able to read and write programs that process numerical data.

3. Objects and Graphics

- To understand the concept of objects and how they can be used to simplify programming.
- To become familiar with the various objects available in the graphics library.
- To be able to create objects in programs and call appropriate methods to perform graphical computations.
- To understand the fundamental concepts of computer graphics, especially the role of coordinate systems and coordinate transformations.
- To understand how to work with both mouse- and text -based input in a graphical programming context.
- To be able to write simple interactive graphics programs using the graphics library.

4. Sequences: Strings, Lists, and Files.

- To understand the string data type and how strings are represented in the computer.
- To become familiar with various operations that can be performed on strings through built-in functions and string methods.
- To understand the basic idea of sequences and indexing as they apply to Python strings and lists.
- To be able to apply string formatting to produce attractive, informative program output.
- To understand basic file-processing concepts and techniques for reading and writing text files in Python.
- To understand basic concepts of cryptography.
- To understand and write programs that process textual information.

5. Defining Functions.

- To understand why programmers divide programs up into sets of cooperating functions.
- To be able to define new functions in Python.
- To understand the details of function calls and parameter passing in Python.
- To write programs that use functions to reduce code duplication and increase program modularity.

6. Decision Structures.

- To understand the simple decision programming pattern and its implementation using a Python if statement.
- To understand the two-way decision programming pattern and its implementation using a Python if-else statement.
- To understand the multi-way decision programming pattern and its implementation using a Python if-elif-else statement.
- To understand the idea of exception handling and be able to write simple exception-handling code that catches standard Python run-time errors.
- To understand the concept of Boolean expressions and the bool data type.
- To be able to read, write, and implement algorithms that employ decision structures, including those that employ sequences of decisions and nested decision structures.

7. Loop Structures and Booleans.

- To understand the concepts of definite and indefinite loops as they are realized in the Python for and while statements.
- To understand the programming patterns interactive loop and sentinel loop and their implementations using a Python while statement.
- To understand the programming pattern end-of-file loop and ways of implementing such loops in Python.
- To be able to design and implement solutions to problems involving loop patterns including nested loop structures.
- To understand the basic ideas of Boolean algebra and be able to analyze and write Boolean expressions involving Boolean operators.

8. Simulation and Design

- To understand the potential applications of simulation as a way to solve real-world problems.
- To understand pseudo-random numbers and their application in Monte Carlo simulations.
- To understand and be able to apply top-down and spiral design techniques in writing complex programs.
- To understand unit testing and be able to apply this technique in the implementation and debugging of complex programs.

9. Defining Classes.

- To appreciate how defining new classes can provide structure for a complex program.
- To be able to read and write Python class definitions.
- To understand the concept of encapsulation and how it contributes to building modular and maintainable programs.
- To be able to write programs involving simple class definitions.

10. Data Collections

- To understand the use of lists (arrays) to represent a collection of related data.
- To be familiar with the functions and methods available for manipulating Python lists.
- To be able to write programs that use lists to manage a collection of information.
- To be able to write programs that use lists and classes to structure complex data.
- To understand the use of Python dictionaries for storing non-sequential collections.

11. Using Python in a Linux environment.

- To know what's Linux.

- To understand how to start with Linux

12. Object-Oriented Design (optional)

- To understand the process of object-oriented design.
- To be able to read and understand object-oriented programs.
- To understand the concepts of encapsulation, polymorphism, and inheritance as they pertain to object-oriented design and programming.

13. Algorithm Design and Recursion (optional)

- To understand basic techniques for analyzing the efficiency of algorithms.
- To know what searching is and understand the algorithms for linear and binary search.
- To understand the basic principles of recursive definitions and functions and be able to write simple recursive functions.
- To understand sorting in depth and know the algorithms for selection sort and merge sort.

Course Grading

Grades will be based on the following:

Chapter-exams	45%
Homework	30%
Final Exam	25%
Total	100%

A:	90.0 – 100%
B:	80.0 – 89.9%
C:	70.0 – 79.9%
D:	60.0 – 69.9%
F:	below 60%

Homework:

There is no paper homework. Homework problems will be assigned for each lecture. **The assignments are due by each Sunday midnight (MST), and need to be submitted in Canvas.** Assignments completed after the associated due date will be assessed a 10% late penalty.

Communication:

Communication plays a vital role in an online student's success. Communication methods for this course include announcements, email, and online office hours.

Exams

All the exams are proctored in the Zoom meeting. **The final exam is a comprehensive exam and must be proctored.** **The exam dates for the in-class exams will be given in class at least one week prior to the exam.**

The Final exam will be held through Zoom meeting from 9:00AM—11:00AM (MST) on December 8th, 2021.

Withdrawing

The last day to withdraw from a course or from the University is November 5th, 2021.

Tutoring

Tutoring is available on campus at ENMU through Student Services. To set up an appointment, call 575-562-2286.

Academic Integrity Policy

Plagiarism and Cheating of any kind on an examination, quiz, or assignment will result at least in an "F" for that assignment (and may, depending on the severity of the case, lead to an "F" for the entire course) and may be subject to appropriate disciplinary action. See the Student Handbook for further information. I will assume for this course that you will adhere to the academic creed of this University and will maintain the highest standards of academic integrity. In other words, don't cheat by giving answers to others or taking them from anyone else. I will also adhere to the highest standards of academic integrity, so please do not ask me to change (or expect me to change) your grade illegitimately or to bend or break rules for one person that will not apply to everyone. Plagiarism is a serious offense. When in doubt, please cite your sources! Please refer to the Catalog for information concerning plagiarism; action can include, but is not limited to failure of the assignment; failure of or a reduced grade for the course; suspension or dismissal from your program of study.

Disability Statement

If you have, or believe you have a disability, you may contact the Disability Services Office (DSO) to coordinate reasonable classroom accommodations, access to technology or other academic assistance. DSO serves students with a wide range of disabilities including but not limited to medical or health impairment, vision or hearing disability, physical disability, learning disabilities, attention deficit disorder, or mental health impairment. All information will be treated confidentially.

Accommodations are not retroactive. They begin only after:

- Appropriate documentation has been received and accepted by the Coordinator of Disability Services
- Letters of Accommodation (LOA) have been prepared
- You have delivered your Letters of Accommodation to your instructors

Appropriate academic accommodations may then be provided for you. You may contact DSO in room 186 Student Academic Services building, phone 575.562.2280.

FERPA and Privacy

As a student, your educational records are considered confidential. Under FERPA (Family

Educational Rights and Privacy Act), your records are confidential and protected. Under most circumstances your records will not be released without your written and signed consent. However, some directory information may be released to third parties without your prior consent unless a written request to restrict this is on file. You can learn more about student rights to privacy at <http://www.enmu.edu/academics/registrar/ferpa>.

In this course, we will be working with third party applications online (i.e. wikis, blogs and other Web 2.0 applications). The different proprietors of these sites may or may not have privacy guarantees and the FERPA policy at ENMU does not apply to these sites. It will be your responsibility to read the privacy documentation at each site. There are many other options to protecting your information at these sites. If you have filed the paperwork and are classified as protected under the ENMU FERPA qualifications, it will be acceptable for you to use an alias when using the Web 2.0 sites required for this course. If you still have concerns, please e-mail me as soon as possible to discuss your options.

Copyright

This course may contain copyright protected materials such as audio or video clips, images, text materials, etc. These items are either linked to or are being used with regard to the Fair Use doctrine in order to enhance the learning environment. Please do not copy, duplicate, download or distribute these items. The use of these materials is strictly reserved for this online classroom environment and your use only. All copyright materials are credited to the copyright holder.

Title IX

ENMU is committed to fostering a safe, productive learning environment and we comply with all aspects related to Title IX of the Educational Amendments of 1972 and 34 C.F.R. Part 106. Title IX prohibits sex discrimination to include sexual misconduct defined as harassment, domestic and dating violence, sexual assault, and stalking.

Incidents of harassment or assault can be reported to the Title IX Coordinator at (575)562-2991 or titleix.coordinator@enmu.edu. Reports can also go to the ENMU Police Department by calling 575-562-2392. If you wish to receive fully confidential support and victim's advocacy you can contact Arise Sexual Assault Services at (575)226-7263.

Confidentiality and Mandatory Reporting

As an instructor, one of my responsibilities is to help create a safe learning environment on our campus. I also have a mandatory reporting responsibility. I am required to share information regarding sexual misconduct or information about a crime that may have occurred on ENMU's campus with the Title IX Coordinator and/or the ENMU Police. Students may speak to someone confidentially by contacting Arise at (575)226-7263.