**CSC125-200 – Python Programming**

**Course Syllabus**

**Spring 2024**

**COURSE DESCRIPTION:**

This is an introductory course designed for any student interested in learning computer programming concepts and hands on computational thinking, all in the context of the Python programming language. No prior experience in programming is necessary. Students will use their own problem-solving abilities to implement programs in Python. This course will show the student how to create basic programming structures including decisions and loops. Further, students will explore unique Python data structures such as tuples and dictionaries. Students will also learn to perform basic debugging techniques. At the end of this course, the student will have learned enough concepts in computer science and programming to be able to write Python programs to solve problems on their own. This course will prepare the student to move on to the Advanced Python Programming course.

**TEACHING METHODS:** The material in this course is presented in multiple formats–lecture, class discussion, and experiential problem-solving and design. Case studies, group and project work are also used to help students better understand the computer programming and application development in general, and Python Programing in particular. Principles discussed in the lectures are illustrated and expanded upon in the laboratory sessions, during which students work together to solve problems and meet design challenges.

**CLASS MEETINGS:**

Lecture and Tuesdays from 06:00 to 8:45pm on Cisco WebEx.

Laboratory

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **INSTRUCTORS:** | | |  |  |  |  |
| **Instructor** |  | **Shubhada S. Jagdale** | | |  |  |
| Email |  | shubhada.jagdale@bhcc.edu | |  |  |  |
|  |  |  |  | |  |  |
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You may also feel free to contact me directly to schedule an appointment if it is more convenient.

**TEXTBOOK:** Fundamentals of Python : First Programs 3rd Edition by Kenneth Lambert

ISBN-10: 133756009X ISBN-13: 9781337560092. Cengage, Copyright 2019.

**SUPPLIES:** A loose-leaf notebook is suggested to help students organize course material. Inaddition, it is recommended that students have a USB stick for software and other assignments (~ 2GB is adequate).

**STUDENT LEARNING OUTCOMES:**

Upon completion of this course students should know and be able to:

* To make each student more competent in technical knowledge of key programming skills.
* Demonstrate how to use IDLE (or other IDE) for the Python programming language
* Establish proficiency in fundamentals of writing Python scripts
* Demonstrate Python scripting components such as variables and flow control structures
* Demonstrate how to use iteration control structures such as For, and While loops
* Demonstrate how to use conditional control structures such if and elif statements
* Demonstrate how to write iterative and recursive programs
* Demonstrate how to work with lists and sequence data
* Write Python functions that will facilitate code reuse
* Teach robust code techniques such as errors handling and process exceptions properly
* Use Python to read and write external files
* Explore Python's OO features with emphasis on properties and methods
* Explore Python’s usage as it relates to Game Design applications
* Provide a solid foundation in programming that will easily adapt to other programming languages
* Provide the student with an in-demand workplace skill
* Determine and design simple Algorithms, and demonstrate within program code.
* Create efficient algorithms
* Explain how an algorithm works based on computer code
* Demonstrate an understanding of the binary (and other) numbering systems, and perform simple calculations
* Explain and demonstrate through computer code Boolean logic
* Articulate the general differences between high-level and low-level computer languages.
* Create computer code that demonstrates an understanding of:
  + Variables
  + Flow control mechanisms (if, while, for, switch, etc.)
  + Arrays
  + Functions

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* Arguments by reference and by value
* Using and understanding objects and methods
* Articulate the purpose of object oriented programming
* Demonstrate OOP concepts in Python code

**ATTENDANCE POLICY:** Students are expected to attend and constructively participate in allclasses and lab sessions in order to make satisfactory progress in this course. Students who attend irregularly cannot expect to fully grasp the concepts discussed in class and demonstrated during hands-on activities. Students are expected to arrive promptly at the start of class. Attendance and participation are 10% of the final grade each student receives for this course. As a professional courtesy, students should notify me, by phone or e-mail, before a class if they will not be attending. In case of serious illness or other problem which may create extensive absences, students should inform the Dean of Students (Room B308, 617-228-2436).

**ASSESSMENTS**

**Weekly Graded Assignments:** Assignments provide students an opportunity todemonstrate proficiency with the concepts and their application. These assignments include writing exercises, technical analysis, problem-solving, lab exercises, and design activities. Weekly Graded Assignments are due at the beginning of class on their due date. E-mail submissions of assignments will not be accepted unless previously arranged with the instructor. Late work (submitted 10 minutes or more after the start of class) will lose one full grade (10%). Work received after the assignment has been graded or discussed in class will receive only half the credit it would have received had it been submitted on-time. However, the lowest Weekly Graded Assignment score for each student will be dropped prior to computing final grades.

**Exams:** Expect 3-4 exams over the course of the semester, including a final exam.

**Final Project:** The Final Project will provide students an opportunity to demonstrate theconcepts and skills they have acquired in this course, as they seek to solve a real-world problem through synthesis, analysis, and design. Objectives and specific requirements of the Final Project will be clarified before student work commences.

**GRADING:** Grades are not a course objective, but are a necessary part of the teaching andlearning process. Final grades will be computed based on the following:

|  |  |
| --- | --- |
| Attendance and Participation | 10% |
| Weekly Graded Assignments | 30% |
| Exams | 40% |
| Final Project | 20% |

Refer to the 2012-2013 BHCC College Catalog for an explanation of the grading scale to be used in this course.

Please note:

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All work submitted for a grade in this course must be legible.

In order to protect students’ privacy, the instructor does not release any information concerning grades via e-mail or telephone. All inquiries concerning grades must be made in person.

**ADDITIONAL COMMENTS ON STUDENTS’ GRADES:** The instructor will strive to befair in evaluating each student’s work and assigning grades. In acknowledgement of the fact that mistakes in evaluating an assignment/assigning a grade may occur, the instructor will re-evaluate and/or re-grade an assessment at the request of the affected student. Such requests must be made during the instructor’s office hours or by appointment and must occur within one week of receiving the graded assessment. The student must submit the original assessment for re-evaluation/re-grading. The outcome of the re-evaluation/re-grading will be final. Refer to the BHCC Student Handbook for more information on grade appeals.

Please note: Illegible work will not be re-graded.

If you need to contact the instructor, email is my preferred method. If you email me for any reason, please use your BHCC email id, as your message will always pass my SPAM filters. You are requested to use the following format, as this will help me to be more responsive to your requests.

[your\_id@bhcc.edu](mailto:your_id@bhcc.edu)

**Subject: CSC125-200** **(Your Name) (Topic)**

I will do my best to respond to you within 24 hours on a weekday, and 48 hours over the weekend.

**STATEMENT ON STUDENT BEHAVIOR:** Students are expected to behave in a mannerthat creates a positive environment for learning in the classroom. To help promote the creation of a positive environment, the following disruptive behaviors will not be permitted during class: talking or texting on cell phones, checking e-mail or browsing the Internet, listening to portable music players, reading newspapers or magazines, working on an assignment for another course, talking during lectures, or frequent trips into and out of the classroom. The determination of the disruptive nature of other behaviors not specifically listed here will be made at the instructor’s discretion. Students who continue to engage in disruptive behaviors will be asked to leave the classroom and must meet with the instructor prior to their return to class, and the student’s grade may be lowered. Dismissal from the classroom may occur without a prior warning to the student that his/her behavior is disruptive and/or unacceptable. Please refer to the College Catalog and the Student Handbook for an official listing of the college’s policy on student behavior and your rights as a student under this policy.

**Professional and respectful behavior is expected from all students at all times.**

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**POLICY FOR INDIVIDUALS WITH A DISABILITY:** Bunker Hill Community College iscommitted to providing equal access to the educational experience of all students in compliance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. A student with a documented disability, who has not already done so, should schedule an appointment at the Office for Students with Disabilities (Room E222, 617-228-2327) in order to obtain appropriate services.

The Disability Support Services Office is a student-focused department dedicated to assisting members of the BHCC community with documented disabilities. Students may be eligible for services that include testing and classroom accommodation.   For more information or to request an accommodation, contact the Disability Support Services Office at [disabilitysupport@bhcc.edu](https://email.bhcc.edu/owa/redir.aspx?C=101R0Jn6LHE5-a6MByAyky_88BCWfKzZlCHhuYV6lxB-1T6G0VLYCA..&URL=mailto%3adisabilitysupport%40bhcc.edu) or 617-228-2327. Students are encouraged to request accommodations as early as possible, ideally before the start of the semester. For information about programs and services please visit [https://www.bhcc.edu/disabilitysupportservices](https://email.bhcc.edu/owa/redir.aspx?C=5WrkOLH3_vNs27OYWCfeyAXF9Gctb9LqfhhwpsAiW3x-1T6G0VLYCA..&URL=https%3a%2f%2fwww.bhcc.edu%2fdisabilitysupportservices)

**STATEMENT ON PLAGIARISM AND CHEATING:** Cheating and plagiarism are forms ofintellectual dishonesty. Cheating consists of taking credit for work done by another person or doing work for which another person will receive credit. Cheating on examinations, quizzes, or homework consists of knowingly giving, receiving, or using or attempting to give, receive, or use unauthorized assistance. Plagiarism refers to taking and using another author’s thoughts, writings, and drawings as if they were your own, and not giving credit to the owner. This would include unacknowledged paraphrasing of the work of another either by direct quote or rewording another person’s idea, thought, or work. This includes material that is obtained from the computer and the internet. Discussing a problem or an assignment with a fellow student is not plagiarism or cheating (unless such collaboration violates the instructions for that particular assignment). However, copying a portion of an assignment from someone else (including from a solution manual or previous students’ work) or presenting someone else’s work as your own is cheating.

**Cheating and plagiarism are unacceptable behaviors**. Students involved in cheating orplagiarism may receive a failing grade for the assignment, quiz, or test in which cheating or plagiarism was involved. Subsequent cheating or plagiarism by the same student(s) may result in a failing grade for the entire course and/or referral to a disciplinary hearing. Please refer to the College Catalog and the Student Handbook for an official listing of the college’s policy on student behavior and your rights as a student under this policy.

**STUDENT EMERGENCY ASSISTANCE FUND:** Bunker Hill Community College hasestablished a Student Emergency Assistance Fund to provide monetary relief to students for emergencies that may significantly interfere with their ability to continue to attend classes at BHCC. It is intended for students who plan their educational expenses prior to the academic year and then during the time of their enrollment, are confronted with an emergency or unanticipated situation involving their finances. The application criteria and application form are available in the BHCC Financial Aid Office, Room B213, or online at https://bhcc.dreamkeepers.org. Applications will be accepted after the end of the schedule adjustment period. The fund does not support tuition, fees, and books.

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**HIGH LEVEL SCHEDULE:**

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|  |  | Week Of |  |  |  | Topics | |  | Assignment(s) | |
|  |  |  |  |  | |  |  |  |  |  |
| 1. | 01/23 | |  | **Course Overview;** | | | | Read Ch 1 | | |
|  |  |  |  | Scope and Requirements of the Course. | | | | Ch1 Review | | |
|  |  |  |  |  | Brief Overview of Computer Systems | | |
|  |  |  |  |  | Simple examples of Python Programs. | | | Questions | | |
|  |  |  |  |  | Programming Style. | | | Ch1 Projects #1-10 | | |
|  |  |  |  | The “IDLE” Integrated Development | | | |  |  |  |
|  |  |  |  |  | Environment. | | |  |  |  |
|  |  |  |  | Getting Started with Python Programming | | | |  |  |  |
|  |  | |  |  | | | |  | | |
| 2. | 01/30 | |  | **Software Development, Data Types and Expressions;** | | | | Read Ch2 | | |
|  |  |  |  | • | Strings, Assignment, and Comments | | | Ch2 Review Questions | | |
|  |  |  |  | • | Numeric Data Types and Character Sets | | | Ch2 Projects #1,2,4 | | |
| 3. | 02/06 | |  | **Software Development, Data Types and Expressions;** | | | | Ch2 Projects | | |
|  |  |  |  | **(Continued…);** | | | | #5,6,8,9,10 | |  |
|  |  |  |  | • | Expressions | | |  |  |  |
|  |  |  |  | • Using Functions and Modules | | | |  |  |  |
|  |  | |  |  | | | |  | | |
| 4. | 02/13 | |  | **Loops and Selections Statements;** | | | | Read Ch3 | | |
|  |  |  |  | • | The For Loop | | | Ch3 Review Questions | | |
|  |  |  |  | • | Formatting Text for Output | | | Ch3 Projects #1,2,4  Groklearning assignment | | |
|  |  |  |  | • Specifying steps in a Range | | | |  |  |  |
| 5. | 02/20 | |  | **Loops and Selections Statements (continued…);** | | | | Ch3 Projects #5,7,8 groklearning | | |
|  |  |  |  | • The Boolean data type | | | |  |  |  |
|  |  |  |  | • If-Else statement | | | |  |  |  |
|  |  |  |  | • | Logical Operators | | |  | | |
|  |  |  |  | • | Conditional Iteration: the While Loop | | |
|  |  |  |  |  |  |  |
|  |  |  |  | • | Random Numbers | | |  |  |  |
| 6. | 02/27 | |  | **Strings and Text Files;** | | | | Read Ch4 | | |
|  |  |  |  | • Accessing Characters and Substrings in Strings | | | | Ch4 Review Questions | | |
|  |  |  |  | • | The Structure of Strings | | |
|  |  |  |  | • | The Subscript Operator | | | Ch4 Projects #1,2,3,5  Groklearning | | |
|  |  |  |  | • | Slicing for Substrings | | | Introduce Semester | | |
|  |  |  |  | • | Testing for a Substring with the in Operator | | |
|  |  |  |  | Project | | |
|  |  |  |  | • | Strings and Number | | |
|  |  |  |  |  |  |  |
|  |  |  |  | • | String Methods | | |  | **Exam #1** |  |

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|  |  | Week Of |  |  |  | Topics | |  |  | Assignment(s) | |
|  |  |  |  |  | |  |  |  |  |  |  |
| 7. | 03/05 | |  | **Strings and Text Files (continued…);** | | | |  | Ch4 Projects #6,8,9,10 groklearning | | |
|  |  |  |  | • | Text Files | | |  |  |  |  |
|  |  |  |  | • Writing Text to a File | | | |  |  |  |  |
|  |  |  |  | • Writing Numbers to a File | | | |  |  |  |  |
|  |  |  |  | • Reading Text from a File | | | |  |  |  |  |
|  |  |  |  | • Reading Numbers from a File | | | |  |  |  |  |
|  |  |  |  | • Accessing and Manipulating Files and | | | | |  |  |  |
|  |  |  |  |  | Directories on Disk | | |  |  |  |  |
| 8. | 03/12 | |  | **Lists;** |  |  |  |  | Read Ch. 5 | | |
|  |  |  |  | • Replacing an Element in a List | | | |  | Ch5 Review Questions | | |
|  |  |  |  | • | List Methods for Inserting and Removing | | | |
|  |  |  |  |  | Elements | | |  | Ch5 Projects #1,2,4,5 groklearning | | |
|  |  |  |  | • | Searching a List | | |  |  |  |  |
|  |  |  |  | • | Sorting a List | | |  |  |  |  |
|  |  | |  |  | | | |  |  | | |
| 9. | 03/26 | |  | **Lists (Continued…);** | | | |  |  | | |
|  |  |  |  | • Mutator Methods and the Value None | | | | | Ch5 Projects #6,7 | | |
|  |  |  |  | • | Aliasing and Side Effects | | |  |
|  |  |  |  | • Equality: Object Identity and Structural | | | | |  |  |  |
|  |  |  |  |  | Equivalence | | |  | Semester Project: | | |
|  |  |  |  | • | Example: Using a List to Find the Median of a | | | |
|  |  |  |  |  | Set of Numbers | | |  | Phase 1 groklearning | | |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  | • | Tuples | | |  |  |  |  |
|  | | |  |  | | | |  |  | | |
| 10. 04/02 | | |  | **Dictionaries;** | | | |  | Ch5 Projects #8, 9 groklearning | | |
|  |  |  |  |  | * Dictionary Literals | | |  |  |  |  |
|  |  |  |  | * Adding Keys and Replacing Values | | | | |  |  |  |
|  |  |  |  |  | * Accessing Values * Removing Keys * Traversing a Dictionary | | |  |  |  |  |
| 11. 04/09 | | |  | **Design with Functions;** | | | |  | Read Ch 6 | | |
|  |  |  |  | • | Functions Eliminate Redundancy | | |  | Ch6 Review Questions | | |
|  |  |  |  | • | Functions Hide Complexity | | |  |
|  |  |  |  |  | Ch6 Projects #1,2,3,4 groklearning | | |
|  |  |  |  | • Functions Support General Methods with | | | | |  |  |  |
|  |  |  |  |  | Systematic Variations | | |  |  |  |  |
| 12. 04/16 | | |  | **Design with Functions (continued…);** | | | |  | Ch6 Proj #5,6,7,8 grok | | |
|  |  |  |  | • Problem Solving with Top-Down Design | | | | |  |  |  |
|  |  |  |  | • The Design of the Text-Analysis Program | | | | |  |  |  |
|  |  |  |  | • The Design of the Sentence-Generator Program | | | | |  |  |  |
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|  | Week Of |  |  |  | Topics | |  | Assignment(s) | |
|  |  |  |  | |  |  |  |  |  |
| 13. 04/23 | |  | **Design with Functions (continued…);** | | | | Ch6 Projects #9,10 | | |
|  |  |  | • Design with Recursive Functions | | | |  |  |  |
|  |  |  | • Defining a Recursive Function | | | | Semester Project: | | |
|  |  |  | • | The Costs and Benefits of Recursion. | | |
|  |  |  | Phase 3: Begin | | |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | presentations | | |
| 14. 04/30 | |  | **Simple Graphics and Image Processing** | | | | Read Ch 7 | | |
|  |  |  | • Overview of Turtle Graphics | | | | Ch7 Review Questions | | |
|  |  |  | • | Turtle Operations | | |
|  |  |  | • | Object Instantiation and the turtle graphics | | | Ch7 Projects #1,2,3,4,5,6,7,8 | | |
|  |  |  |  | Module Drawing Two-Dimensional Shapes | | |  |  |  |
|  |  |  | • | Semester Project Presentations | | |  |  |  |
|  | |  |  | | | |  | | |
| 16.05/07 | |  | **Simple Graphics and Image Processing (continued…)** | | | | Final Exam | | |
|  |  |  | Taking a Random Walk | | | |  |  |  |
|  |  |  | Colors and the RGB System | | | |  |  |  |
|  |  |  | Example: Drawing with Random Colors | | | |  |  |  |
|  |  |  | Using the str Function with Objects | | | |  |  |  |
|  |  |  |  | Semester Project Presentations  Semester Review  Final Exan | | |  |  |  |
|  | |  |  | | | |  | | |

The instructors reserve the right to modify this schedule as conditions warrant.

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**Course Signoff Sheet**

**(Directions: Read the Course Syllabus, sign this form, and tear this sheet off and submit to instructor as HW for the second class).**

By voluntarily signing where indicated below, I acknowledge and/or agree to the following:

1. I have read the syllabus for Python Programming CSC125-200
2. I understand the syllabus for Python Programming CSC125-200, and I have received clarification for any parts of the syllabus that I did not understand.
3. I agree to terms described in the syllabus for course Python Programming CSC125-200.

If you have any questions, or something is not clear, please ask your question(s) here:



Signed,

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Print Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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