Three Rivers COMMUNITY COLLEGE

Course and Instructor Information

Course Title: Introduction to Programming (CSC K108)
Credits: 4
Format: Lecture & Lab
Instructor: Patrick Burton
Location: B-227
Lecture/Lab: Tuesday/Thursday 11:00 – 12:15am & Thursday 09:16am – 10:56am
Email: pburton@trcc.commnet.edu
Office Hours/Availability: see Blackboard Learn site or email to schedule an appointment

This course may contain copyrighted information.

All information is subject to change at any time. Check the course **Blackboard Learn** page for announcements and updates.

Course Materials

Online version of book should be obtained no later than the first day of classes since it will be used throughout the semester for content, concepts, labs, etc.

> **https://learn.zybooks.com**
>
> **zyBook code: COMMNETCSCK108BurtonFall2019**

Additional course materials including lecture notes, links, assignments, and handouts will be posted on this course's site within **Blackboard Learn**.

Required Software/Supplies

Unless otherwise stated, the course **Blackboard Learn** site is required for all assignment submissions. Email or hard copy submission **will not be accepted.**

Homework Assignments and Documentation generation:

- ASCII text files for *.py Python source code and data files
- Microsoft Office Word 2010+
- Microsoft Office PowerPoint 2010+

- Other drawing tool with artifacts submitted in a graphics format (*e.g.*, PNG or JPG)

Students will need to download a free Python Integrated Development Environment such as Anaconda (https://www.anaconda.com/) and install it on their own computer. In addition other no-charge software may be required during the semester.

Removable media is required. Specific usage will be covered in class so do not purchase before discussing this with the instructor.

Course Description

This course presents a broad introduction to computer science including computer design, programming, information processing and algorithmic problem solving. It is intended as a foundation for beginning computer science students and others seeking to use computers as a tool in business, engineering, science and other disciplines. In addition, this course provides an introduction to a high level computer programming language. The student will learn to design, develop and implement programs to solve various data processing problems. Topics covered include control structures, functions and parameter passing, file I/O, and an introduction to arrays and structures. In the lab, the student will use the computer to create and run programs to solve problems discussed in the lecture portion.

Goals

More specifically, this course will help students with:

- Comprehending and using computing and programming terminology.
- Transforming a problem statement into a computational "recipe" – algorithm.
- Utilizing a programming language (*e.g.*, Python) as a tool for:
  - Understanding the process of writing code,
  - Describing, modeling, and expressing data,
  - Conveying computations, conditions, control flow, and
  - Debugging and fixing code-based solutions.

Course Outline/Schedule

Unit	Duration	Topics
1	**1 Week**	**zyBooks Chapter 1 – Introduction to Python** **Learning Objectives/Goals:** • Gain an understanding of computer, computing, & programming terminology & concepts • Describe aspects of Python as a programming language • Distinguish comments & whitespace from code • Comprehend aspects of computational & algorithmic thinking

		• Navigate the zyBooks environment • Install & navigate a Python Integrated Development Environment
2	**1 Week**	**zyBooks Chapter 2 – Variables & Expressions** **Learning Objectives/Goals:** • Descriptively declare & name variables following syntax rules • Define an expression with variables and constants • Explain basic syntax of a Python program • Comment code • Retrieve basic inputs from the user & place into variables • Write a Python program using variables & expressions
3	**1 Week**	**zyBooks Chapter 3 – Types** **Learning Objectives/Goals:** • Recognize the differences between various data types • Understand basic data type conversions • Format data using data type conversion specifiers for output • Write a Python program employing different types of data

4	**2 Weeks**	**zyBooks Chapter 4 – Branching**
		
		Learning Objectives/Goals:
		
		• Declare conditions using Boolean variables & expressions
		• Implement flow of control
		    o One path if statements
		    o Two path if-else statements
		    o Multiple path conditions if-elif-elif-else statements
		    o Nested
		• Understand & utilize
		    o Conditional operators
		    o Short-circuit evaluation
		    o Comparison of
		        ▪ Strings & alphanumeric data
		        ▪ floating-point values
		        ▪ integer values

5	2 Weeks	**zyBooks Chapter 5 – Loops**
		
		Learning Objectives/Goals:
		
		- Write programs executing statements repeatedly
		- Implement flow of control with loops:
		  - while
		  - for
		  - Nested
		- Understand looping constructs
		  - Choose between approaches
		  - Discuss similarities and differences
		  - Reduce repetitive code

6	2 Weeks	**zyBooks Chapter 6 – Functions**
		
		Learning Objectives/Goals:
		
		- Define functions with and without
		  - Parameters (aka. arguments)
		  - A return value
		- Determine scope of variables
		- Invoking functions
		- Pass arguments to functions
		- Develop reusable code that is
		  - Modular
		  - Easy to Read
		  - Easy to Debug
		  - Easy to Maintain
		- Utilize stepwise refinement techniques

7	1 Week	**zyBooks Chapter 7 – Files & Exceptions** **Learning Objectives/Goals:** - Understand the basics of File Input & Output - Apply input, output & formatting techniques in a Python program - Comprehend the advantages of exception handling - Write a program that handles exceptions
8	1 Week	**zyBooks Chapter 8 – Strings** **Learning Objectives/Goals:** - Explore more complex text data manipulation - Format text-data using data type conversion specifiers for output - Parse & transform strings - Apply string techniques in a Python program

9	**1 Week**	**zyBooks Chapter 9 – Lists & Dictionaries** **Learning Objectives/Goals:** • Understand why collections of data are necessary • Create single & multi-dimensional collections • Initialize & specify default values • Utilize common collection operations • Design & code programs that use & process collections of data with loops
10	**2 Weeks**	**zyBooks Chapter 10 – Modules & Plotting** **Learning Objectives/Goals:** • Understand the basics of Python modules/libraries (*e.g.*, Matplotlib) • Distinguish between basic types of plots • Design & code programs that analyze datasets & visualize results

Note: The foregoing course outline is subject to change as conditions warrant.

Course Requisites

1. **Attendance:** Students are expected to be punctual and responsible for all assigned **zyBooks** reading materials and any additional course content and discussions posted on the course **Blackboard Learn** site.
2. **Participation:** Active and positive class and online discussion participation is expected.
   a. All **zyBooks Reading & Challenge Exercises** are to be completed within **zyBooks** on or before each class meeting.
   b. A large part of the learning experience will come from discussion of problems (via the Blackboard Learn discussion forums – minimum 1 per unit) and techniques presented in the reading, notes, and from the lab, worksheet, videos, and homework assignments.
   c. Note: Onsite/in-class is not the time to check your email, browse the web for your next purchase, or to play games.
3. **Assignments:**
   a. Assignments are assigned weekly by unit and include labs, worksheets, exercises, assessments, and additional homework problems.
   b. All assignments are designed for the student to explore, analyze, and utilize various knowledge, skills, and abilities acquired and reinforced by each unit's readings and the posted content and related research items.
   c. All assignments are to be your own work and due by the **date and time** posted within **zyBooks** (online labs) and for worksheet, exercise, discussions, homework, *etc.* via the unit assignment links in the course **Blackboard Learn** site.
   d. Assignments are graded on the quality of the required written documentation and on the quality of the actual computer code (*e.g.*, Python files), comments, *etc*.

e. To receive full credit, assignments must meet all requirements and specifications, ***and*** must do so within the quality guidelines described in the assignment text and class discussions.

f. It is recommended that individuals start working on assignments as soon as it is released, and ask questions several days before due if additional explanations are needed on a specific assignment.

4. **Electronic submission of assignments:** Written documentation and answers to questions pertaining to an assignment *must* be submitted using Microsoft Word 2010+ (**.doc** or **.docx**) formats unless otherwise specified.

a. **All documentation, code, scripts, etc. shall be submitted electronically** using the appropriate course **zyBooks** or **Blackboard Learn** site assignment link.

b. Remember, because clocks do not always match, you should be submitting your assignment at least 15 minutes before it is due. Extenuating circumstances should be discussed with the instructor **prior to the due date**.

c. It is the student's responsibility to check before the deadline that the files they have uploaded have been effectively submitted and are not unreadable or corrupted.

d. Students should check that their files have been correctly submitted by downloading them and testing that they can be opened and/or compiled and tested.

5. **Quizzes/Tests:** Quizzes covering the material in the reading, assignments, and/or our discussions may be unannounced, while tests will be announced and scheduled at least a week in advance.

6. **Exam/Project:** There will be a final programming project that will encompass multiple facets of the material covered. To receive full credit, multiple submission milestones must be met. Additional project and submission details will be provided via the course **Blackboard Learn** site.

7. The instructor reserves the right to change topics and dates accordingly as the semester progresses. All changes will be communicated in an appropriate manner (using announcements and updates within **Blackboard Learn** site).

Course Grading

- Submission of assignments after the deadline will result in 0 points for that assignment (includes labs, discussions, worksheets, quizzes, tests, *etc.*).
- **Final Exam/Projects will not be accepted late.**
- Extenuating circumstances should be discussed with the instructor at least one week prior to any due date or as soon as feasible depending on the situation. Additionally, other college accepted correspondence or paperwork may be required for justification.

Summary of Course Grading:

Course Component	Points
Participation/Discussions	100
Unit Quizzes	100
Unit Labs	260
Worksheets/Exercises	80
Problem Analysis & Digication Upload	60
Tests	100
Project	300

Grading Scale:

Total Points	Letter Grade
930-1000	A
900-929	A-
870-899	B+
830-869	B
800-829	B-
770-799	C+
730-769	C
700-729	C-
670-699	D+
630-669	D
600-629	D-
<600	F

Student Responsibilities

Online Learning/Digication Portfolio

All students are required to maintain an online learning portfolio in Digication that uses the college template, in as much as it is pertinent and supported by outcome products of this course. Through this electronic tool students will have the opportunity to monitor their own growth in college-wide learning. The student will keep his/her learning portfolio and may continue to use the Digication account after graduation. A Three Rivers General Education Assessment Team will select and review random works to improve the college experience for all. Student work reviewed for assessment purposes will not include names and all student work will remain private and anonymous for college improvement purposes. Students will have the ability to integrate learning from the classroom, college, and life in general, which will provide additional learning opportunities. If desired, students will have the option to create multiple portfolios.

Withdrawing from the Course

A student who simply stops submitting work will receive the grade earned on that work, usually a failing grade. To receive a "W" grade instead, apply for a withdrawal (*check with registrar for last date to withdraw*). A "W" will be entered on the student transcript. An "N" (implicit withdrawal) may be entered for a student that stops submitting work before 60% of the class is completed but it will still show up as an "F" on your transcript.

Academic Resources

Log In & Net ID

https://www.trcc.commnet.edu/learning-resources/educational-technology/student-resources/5-steps-for-getting-started/

General Resources Web Page for eLearning, Blackboard, Online, Hybrid, Help Desk

https://www.trcc.commnet.edu/learning-resources/educational-technology/student-resources/

Academic Calendar

https://catalog.threerivers.edu/content.php?catoid=5&navoid=294

Student Resources

Advising & Counseling

https://www.trcc.commnet.edu/student-services/advising-and-counseling-center/

Sexual Misconduct

https://www.trcc.commnet.edu/student-services/sexual-misconduct-resources-and-education/

Student Handbook

https://www.trcc.commnet.edu/wp-content/uploads/2017/06/trccstudenthandbook.pdf

Policies

General Policies

https://catalog.threerivers.edu/content.php?catoid=5&navoid=240

Academic Integrity

https://catalog.threerivers.edu/content.php?catoid=5&navoid=240#Academic_Integrity_Policy

Faculty and Staff

https://www.threerivers.edu/directory/

Weather & Cancellations

1-860-215-9000 Press 1 for College Closing Announcement -or- https://www.threerivers.edu/ for posted announcement