CSD-1233 Python Programming

Computer Studies

Course Number:	Co-Requisites:	Pre-Requisites:
CSD-1233	N/A	N/A
Prepared by:	Aaron Sarson, Coordinator	
Approved by:	Chris Slade, Senior Dean	
Approval Date:	Thursday, May 19, 2022	
Approved for Academic Year:	2022-2023	
Credit Weight:	3.00	

Course Description

This course uses the Python programming language to reinforced programming logic and problem solving skills taught in CSD 1133, Problem Solving/Program Logic. Students implement Python programs to (1) design, test, and debug programs using a top-down modernized approach; (2) control the flow of a program with decision and repetitive structures and functions; (3) implement array processing; and (4) develop programs that process data from files including control break processing.

Course Learning Outcomes/Course Objectives

1. **Design, test, and debug programs using a top-down modernized approach**
   - 1.1 Define and use local variables and constants
   - 1.2 Define and use global variables and constants
   - 1.3 Read input from the keyboard
   - 1.4 Perform calculations using arithmetic operators
   - 1.5 Display output with the *print* function
   - 1.6 Document programs with comments
   - 1.7 Use boolean variables with logical and comparison operators to represent complex decision logic
   - 1.8 Write programs that peform operations on strings, including string comparisons

2. **Control the flow of a program with decision and repetitive strucutres and functions**
   - 2.1 Use the *if*, *if-else*, *if-elif-else* statements to implement decision structures
   - 2.2 Use the *while* loop for condition-controlled loops
   - 2.3 Use the *for* loop for count-based loops

2.4 Use loops to validate user input for correctness

2.5 Use sentinel values to terminate loop execution

2.6 Calculate a running total using an accumulator

2.7 Define and call void and value returning functions

2.8 Use modules, including math and random

3. Implement array processing

3.1 Use sequences to store and work with ordered data

3.2 Implement one-dimensional and multi-dimensional lists/tuples

3.3 Locate items in list/tuples with the *in* operator

3.4 Use slicing to extract a subset of a given list/tuple/string

3.5 Use list methods and built-in functions to work with Pyhton lists

3.6 Develop programs that make shallow and deep copies of a list/tuple

3.7 Search lists/tuples/strings using loop-based and list comprehension approaches

3.8 Sort lists/strings using built-in functions and loop-based approaches

4. Develop programs that process data from files including control break processing

4.1 Develop programs to work with both input and output files

4.2 Use loops to perform sequential file access

4.3 Use a *try-except-finally* block to handle exceptions related to reading and writing files

4.4 Solve control break problems using file I/O and complex decision logic

Relationship to Essential Employability Skills

This course contributes to your program by helping you achieve the following Essential Employability Skills:

EES 1.1	Communicate clearly, concisely and correctly in the written, spoken and visual form that fulfills the purpose and meets the needs of the audience. (T, A,)
EES 1.2	Respond to written, spoken or visual messages in a manner that ensures effective communication. (T, A,)
EES 2.3	Execute mathematical operations accurately. (T, A,)
EES 3.4	Apply a systematic approach to solve problems. (T, A,)
EES 3.5	Use a variety of thinking skills to anticipate and solve problems. (T, A,)
EES 4.7	Analyze, evaluate and apply relevant information from a variety of sources. (T, A,)
EES 6.10	Manage the use of time and other resources to complete projects. (T, A,)
EES 6.11	Take responsibility for one's own actions, decisions and consequences. (T, A,)

Relationship to Vocational Learning Outcomes

This course provides the opportunity for you to achieve the following Program Vocational Learning Outcomes (VLO's), which will be taught and evaluated at a taught (T), assessed (A) or culminating performance (CP) level:

CPCM - Computer Programmer

VLO 1	Identify, analyze, develop, implement, verify and document the requirements for a computing environment. (T, A)
VLO 6	Select and apply strategies for personal and professional development to enhance work performance. (T, A)
VLO 9	Support the analysis and definition of software system specifications based on functional and non-functional requirements. (T, A)
VLO 10	Contribute to the development, documentation, implementation, maintenance and testing of software systems by using industry standard software development methodologies based on defined specifications and existing technologies/frameworks. (T, A)
VLO 11	Apply one or more programming paradigms such as, object-oriented, structured or functional programming, and design principles, as well as documented requirements, to the software development process. (T, A)
VLO 12	Model, design, implement, and maintain basic data storage solutions. (T, A)

CPCT - Computer Programmer

VLO 1	Identify, analyze, develop, implement, verify and document the requirements for a computing environment. (T, A)
VLO 6	Select and apply strategies for personal and professional development to enhance work performance. (T, A)
VLO 9	Support the analysis and definition of software system specifications based on functional and non-functional requirements. (T, A)
VLO 10	Contribute to the development, documentation, implementation, maintenance and testing of software systems by using industry standard software development methodologies based on defined specifications and existing technologies/frameworks. (T, A)
VLO 11	Apply one or more programming paradigms such as, object-oriented, structured or functional programming, and design principles, as well as documented requirements, to the software development process. (T, A)
VLO 12	Model, design, implement, and maintain basic data storage solutions. (T, A)

CPRO - Computer Programmer

VLO 1	Identify, analyze, develop, implement, verify and document the requirements for a computing environment. (T, A)
VLO 6	Select and apply strategies for personal and professional development to enhance work performance. (T, A)
VLO 9	Support the analysis and definition of software system specifications based on functional and non-functional requirements. (T, A)
VLO 10	Contribute to the development, documentation, implementation, maintenance and testing of software systems by using industry standard software development methodologies based on defined specifications and existing technologies/frameworks. (T, A)
VLO 11	Apply one or more programming paradigms such as, object-oriented, structured or functional programming, and design principles, as well as documented requirements, to the software development process. (T, A)
VLO 12	Model, design, implement, and maintain basic data storage solutions. (T, A)

CSAC - Computer Software and Database Development

VLO 3 Deploy software applications for multiple devices and multiple operating systems. (T, A)

CSAM - Computer Software and Database Development

VLO 3 Deploy software applications for multiple devices and multiple operating systems. (T, A)

CSAT - Computer Software and Database Development

VLO 3 Deploy software applications for multiple devices and multiple operating systems. (T, A)

FSDM - Full Stack Software Development

VLO 3 Implement program logic through the use of various programming paradigms (i.e. procedural, object-oriented, functional) that are supported by industry standard programming languages. (T, A)

FSDS - Full Stack Software Development

VLO 3 Implement program logic through the use of various programming paradigms (i.e. procedural, object-oriented, functional) that are supported by industry standard programming languages. (T, A)

FSDT - Full Stack Software Development

VLO 3 Implement program logic through the use of various programming paradigms (i.e. procedural, object-oriented, functional) that are supported by industry standard programming languages. (T, A)

Learning Resources

Required:

Gaddis, T. (2017). Starting Out with Python. (4th ed.). New York, NY: Pearson Education. ISBN: 978-0-13-444432-1

Student Evaluation

Assignments (8 @ 3.125 %) - 25%

Quizzes (8 @ 3.125%) - 25%
Tests (2 @ 25%) - 50%

Grade Scheme

The round off mathematical principle will be used. Percentages are converted to letter grades and grade points as follows:

Mark (%)	Grade	Grade Point	Mark (%)	Grade	Grade Point
94-100	A+	4.0	67-69	C+	2.3
87-93	A	3.7	63-66	C	2.0
80-86	A-	3.5	60-62	C-	1.7
77-79	B+	3.2	50-59	D	1.0
73-76	B	3.0	0-49	F	0.0
70-72	B-	2.7			

Prior Learning Assessment and Recognition

Students who wish to apply for prior learning assessment and recognition (PLAR) need to demonstrate competency at a post-secondary level in all of the course learning requirements outlined above. Evidence of learning achievement for PLAR candidates includes:

- Other: Students interested in PLAR consideration are advised to discuss details with the program coordinator.

Course Related Information

Refer to Program Related Information

Program Related Information

CPRO - Computer Programmer

Program policies pertaining to CSD courses in the CPRO and CSAC programs are posted in D2L for all CSD courses. These policies explain the waiver option as well as policies related to evaluations and classroom conduct. Students are expected to be aware and abide by these policies.

CSAC - Computer Software and Database Development

Program policies pertaining to CSD courses in the CPRO and CSAC programs are posted in D2L for all CSD courses. These policies explain the waiver option as well as policies related to evaluations and classroom conduct. Students are expected to be aware and abide by these policies.

College Related Information

Note: It is the student's responsibility to retain course outlines for possible future use to support applications for transfer of credit to other educational institutions.

Academic Integrity

Lambton College is committed to high ethical standards in all academic activities within the College, including research, reporting and learning assessment (e.g. tests, lab reports, essays).
The cornerstone of academic integrity and professional reputation is principled conduct. All scholastic and academic activity must be free of all forms of academic dishonesty, including copying, plagiarism and cheating.

Lambton College will not tolerate any academic dishonesty, a position reflected in Lambton College policies. Students should be familiar with the Students Rights and Responsibilities Policy, located at lambtoncollege.ca. The policy states details concerning academic dishonesty and the penalties for dishonesty and unethical conduct.

Questions regarding this policy, or requests for additional clarification, should be directed to the Lambton College Student Success Department.

Students with Disabilities

If you are a student with a disability please identify your needs to the professor and/or the Accessibility Centre so that support services can be arranged for you. You can do this by making an appointment at the Accessibility Centre or by arranging a personal interview with the professor to discuss your needs.

Student Rights and Responsibility Policy

Acceptable behaviour in class is established by the instructor and is expected of all students. Any form of misbehaviour, harassment or violence will not be tolerated. Action will be taken as outlined in Lambton College policy.

Date of Withdrawal without Academic Penalty
Please consult the Academic Regulations and Registrar's published dates.

Waiver of Responsibility
Every attempt has been made to ensure the accuracy of this information as of the date of publication. The content may be modified, without notice, as deemed appropriate by the College.

Students should note policies may differ depending on the location of course offering. Please refer to campus location specific policies:

LAMBTON COLLEGE POLICIES - applicable to all Lambton College students:
- Student Rights & Responsibilities & Discipline policy (2000-5-1)
- Test & Exam Writing Protocol (2000-1-6)
- Evaluation of Students (2000-1-3)
- **Policy Link** - **https://www.lambtoncollege.ca/custom/Pages/Policies/Policies.aspx**

CESTAR COLLEGE:
- **https://www.lambtoncollege.ca/Programs/International/Lambton_in_Toronto/Student_Policies-17179868204/**

QUEENS COLLEGE:
- **https://www.lambtoncollege.ca/Programs/International/Lambton_in_Mississauga/Student_Policies-17179868190/**