

Course Outline

MAD 102 Introduction to Programming

Course ID: 028920**Academic Year:** 2024/25**Course Description:**

The course is an introduction to general computer concepts and an introduction to the programming process. Students will learn and employ fundamental concepts related to developing basic programming logic. Students will develop small programs that utilize basic control structures, data structures and functions. Students will be introduced to the object-oriented programming process using a modern programming language.

Pre-Requisites: None**Category:** Vocational**Co-Requisites:** None**Course Credits:** 4.00**Special Conditions:** None**Academic Level:** Credit (Post Sec)

Instructional Hours:	Classroom Instruction	30
	Laboratory/Workshops	30
	Other	0
Total Hours		60

Academic Department:

Windsor:	Zekelman School of Business
Chair:	Angelo DeMarco
Chatham:	
Chair:	

Revised By: Darren Takaki**Last Revision:** 2023/04/13

Required Tools, Equipment, and Learning Resources:

Programming in Python 3
zyBooks

Essential Employability Skills (EES):

Description	Teach	Assess
1) Communication: Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.		
2) Communication: Respond to written, spoken, or visual messages in a manner that ensures effective communication		
3) Numeracy: Execute mathematical operations accurately	✓	✓
4) Critical Thinking: Apply a systematic approach to solve problems	✓	✓
5) Critical Thinking: Use a variety of thinking skills to anticipate and solve problems	✓	✓
6) Information Management: Locate, select, organize, and document information using appropriate technology and information systems	✓	✓
7) Information Management: Analyze, evaluate and apply relevant information from a variety of sources		
8) Interpersonal: Show respect for the diverse opinions, values, belief systems, and contributions of others		
9) Interpersonal: Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals		
10) Personal: Manage the use of time and other resources to complete projects		
11) Personal: Take responsibility for one's own actions, decision and consequences		

Course Learning Outcomes (CLO):

Upon successful completion of this course, the student will be able to:
(EKS = Embedded Knowledge and Skills)

- Declare variables and constants to contain data of various types including Strings, Characters, Numbers, and Boolean values. (CLO #1)
EKS:
 - Identify the required inputs, processes and outputs required to solve a problem using the IPO (Input – Processing – Output) method.
 - Explain how computers work and how data is stored and manipulated

- Test and debug programs as they are developed.
 - Explain the program life cycle.
 - Write clear code that is easy to read and formatted to reflect the structure and logic of the program in alignment with professional coding standards.
 - Employ clear and concise comments to correctly explain the intent of a programs code including line-by-line comments and block style comments that describe higher level issues.
 - Explain the importance of appropriate documenting practices
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- Construct simple programs using basic control structures to control program flow. (CLO #2)
EKS:
 - Use pseudocode and standardized flowcharting symbols to represent different steps in the process.
 - Control program flow using selection, sequence and repetition structures.
 - Implement nesting of both repetition and decision logic to solve complex problems.
 - Use “if-then” and “it-then-else” to construct syntax statements that implement simple decision logic to control program flow
 - Describe common relational operators and their functions.
 - Identify compound conditions to implement logic of moderate complexity.
 - Implement nesting of repetition logic to solve more complex problems.
 - Construct methods for repetitive programming tasks using control flow statements (for loop, while and repeat-while loop).
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- Employ basic operators to check, change or combine values (CLO #3)
EKS:
 - Initialize and update values using the assignment operator.
 - Perform arithmetic operations using the standard arithmetic operators, unary operators and the remainder operator.
 - Combine operations using compound assignment operators and ternary conditional operators.
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- Apply common programming concepts to the development process to aid in reusability and abstraction of code. (CLO #4)
EKS:
 - Implement functions (with and without arguments) to increase efficiency, improve programmer productivity and reduce complexity.
 - Construct functions that include defined parameters and return value(s).
 - Employ tuples for a compound return value.
 - Identify the benefits of creating modularized programs.
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- Apply programming concepts to build, search and manipulate various collection types. (CLO #5)
EKS:

- Declare and utilize collection types (arrays, sets and dictionaries) for storing collections of values.
 - Employ statements to access and manipulate the individual elements of the different collection types.
 - Employ statements to iteratively operate on multiple data items stored in an array.
 - Employ iterative and conditional logic to search for data stored in the different collection types.
 - Employ the appropriate statements to insert and delete data stored in arrays, sets and/or dictionaries.
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- Apply object-oriented programming concepts to build programs. (CLO #6)
EKS:
 - Describe the principles of object-oriented programming.
 - Create and utilize classes for modelling of constructs.
 - Define properties and methods to add functionality to classes.

Teaching/Learning Activities:

Interactive Lecture

Labs/Computer Labs

Problem Solving/Problem Analysis

Assessment:**Standard/Traditional Delivery**

- Collection Types Assignment 3.00%

Frequency: 1
Description: Assignments require problem analysis and development of programming solutions. Students apply techniques they have learned to create programs that incorporate collection types.
Outcomes Assessed: 1, 5
EES Assessed: 3, 4, 5, 6
- Control Structure Assignment 6.00%

Frequency: 2
Description: Assignments require problem analysis and development of programming solutions. Students apply techniques they have learned to create programs that implement the sequence, selection and/or repetition structure.
Outcomes Assessed: 1, 2, 3
EES Assessed: 3, 4, 5, 6
- Logical Design Assignment. 3.00%

Frequency: 1
Description: This assignment requires problem analysis and development of programming solutions. Students apply techniques they have learned to create programs through pseudocode and flowcharting

Outcomes Assessed: 1, 2, 3
EES Assessed: 3, 4, 5, 6

- Modular Design Programming Assignment 6.00%

Frequency: 2
Description: Assignments require problem analysis and development of programming solutions. Students apply techniques they have learned to create programs that incorporate modular design.

Outcomes Assessed: 1, 4
EES Assessed: 3, 4, 5, 6

- Object-Oriented Programming 6.00%

Frequency: 2
Description: Assignments require problem analysis and development of programming solutions. Students apply techniques they have learned to create programs using Object Oriented Programming

Outcomes Assessed: 1, 6
EES Assessed: 3, 4, 5, 6

- Programming Concepts Assignments 6.00%

Frequency: 2
Description: Assignments require problem analysis and the development of programming solutions. Students apply techniques they have learned to create algorithms to solve common problems.

Outcomes Assessed: 1, 2, 3, 4, 5, 6
EES Assessed: 4, 5, 6

- Quizzes 10.00%

Frequency: 10
Description: Multiple choice, true/false, matching questions and/or short answer questions based on previous lessons.

Outcomes Assessed: 1, 2, 3, 4, 5, 6
EES Assessed: 3, 4, 5, 6

- Test #1 20.00%

Frequency: 1
Description: A combination of theory and practical test. The theory portion of the test is computer based and contains multiple choice, true/false, matching and short answer. The practical portion of the test will be a hands-on assignment.

Outcomes Assessed: 1, 2, 3
EES Assessed: 3, 4, 5, 6

- Test #2 20.00%

Frequency: 1
Description: A combination of theory and practical test. The theory portion of the test is computer based and contains multiple choice, true/false, matching and short answer. The practical portion of the test will be a hands-on assignment.

Outcomes Assessed: 3, 4, 5
EES Assessed: 3, 4, 5, 6

- Test #3 20.00%

Frequency: 1
Description: A combination of theory and practical test. The theory portion of

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the test is computer based and contains multiple choice, true/false, matching and short answer. The practical portion of the test will be a hands-on assignment.

Outcomes Assessed: 5, 6
EES Assessed: 3, 4, 5, 6

100%

Note: The assessment listed in this outline represents the planned assessment method for this course. Unanticipated conditions during the delivery of the course may necessitate changes to the planned assessment. Students will receive reasonable advance notice should any changes be necessary.

Grading:

A = 80 - 100%?
B = 70 - 79%
C = 60 - 69% ?
D = 50 - 59%
F = Less than 50%

Course Content:

See Embedded Knowledge and Skills (EKSs)

"Academic misconduct, including cheating of any form, will not be tolerated. Consequences may include, but are not limited to, a warning, a grade of "0" on the assignment/test/examination, or a failing grade in the course."

(Code of Students Rights and Responsibilities: Section 7.1.6)

All students and employees of this College have a right to study and work in an environment that is free from harassment and discrimination.

Accommodation Statement

The College will provide supports and services to all students with disabilities, both temporary and permanent, with valid supporting documentation. Interim accommodation requests will be received in good faith and can be provided pending receipt of medical documentation. Retroactive accommodations will be considered based on the unique circumstances of the individual matter. The College will give all Human Rights Code-related requests for accommodation meaningful consideration.

Procedure: The student is responsible to meet with a counsellor in Accessibility Services to discuss their functional limitations and accommodation needs and provide Accessibility Services with supporting documentation. Students are not required under the Ontario Human Rights Code to disclose their disability diagnosis (with the exception of Learning Disabilities) to receive accessibility supports and services and/or academic accommodations. Students are encouraged to meet with a counsellor prior to the start of a semester to provide information and arrange accommodations.