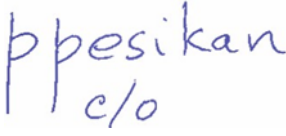# Course Outline

School:	Eng. Tech. & Applied Science
Department:	Information and Communication Engineering Technology (ICET)
Course Title:	Programming 2
Course Code:	COMP 123
Course Hours/Credits:	56
Prerequisites:	COMP 100
Co-requisites:	N/A
Eligible for Prior Learning, Assessment and Recognition:	Yes
Originated by:	Programming Languages Group
Revised by:	Narendra Pershad
Revision Date:	Winter 2017
Current Semester:	Fall 2020
Approved by:	*ppesikan c/o*

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Chairperson/Dean

Acknowledgement of Traditional Lands

Centennial is proud to be a part of a rich history of education in this province and in this city. We acknowledge that we are on the treaty lands and territory of the Mississaugas of the Credit First Nation and pay tribute to their legacy and the legacy of all First Peoples of Canada, as we strengthen ties with the communities we serve and build the future through learning and through our graduates. Today the traditional meeting place of Toronto is still home to many Indigenous People from across Turtle Island and we are grateful to have the opportunity to work in the communities that have grown in the treaty lands of the Mississaugas. We acknowledge that we are all treaty people and accept our responsibility to honor all our relations.

Course Description

In Programming II, students will learn the fundamentals of object-oriented programming (OOP) concepts including data abstraction, inheritance and polymorphism. Students will learn to design, code and document object-oriented programs. The concepts in COMP123 will be presented using both Console and Windows-based applications

Program Outcomes

Successful completion of this and other courses in the program culminates in the achievement of the Vocational Learning Outcomes (program outcomes) set by the Ministry of Advanced Education and Skills Development in the Program Standard. The VLOs express the learning a student must reliably demonstrate before graduation. To ensure a meaningful learning experience and to better understand how this course and program prepare graduates for success, students are encouraged to review the Program Standard by visiting http://www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/. For apprenticeship-based programs, visit http://www.collegeoftrades.ca/training-standards.

Course Learning Outcomes

The student will reliably demonstrate the ability to:

1. Design, code and test a program that implements methods with parameter list. The program must pass and be supported by the chosen programming language
2. Design, code and test a program that defines and uses classes, and controls the accessibility of class members.
3. Design, code and test a program that uses inheritance and composition.
4. Design, code and test a program that uses abstract base classes and interfaces.
5. Design, code and test a program that implements polymorphism.
6. Design, code and test a program that stores the data in sequential text files.
7. Design, code and test a program that uses exception handling.
8. Design, code and test a programs that uses a Graphical User Interface (GUI) to interact with users.
9. Design, code and test a program that can serialize and deserialize data
10. Design, code and test a program that uses collections

Essential Employability Skills (EES)

The student will reliably demonstrate the ability to*:

1. Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.
2. Respond to written, spoken, or visual messages in a manner that ensures effective communication.
3. Execute mathematical operations accurately.
4. Apply a systematic approach to solve problems.
5. Use a variety of thinking skills to anticipate and solve problems.
9. Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals.
10. Manage the use of time and other resources to complete projects.
11. Take responsibility for one's own actions, decisions, and consequences.

There are 11 Essential Employability Skills outcomes as per the Ministry Program Standard. Of these 11 outcomes, the following will be assessed in this course.

Global Citizenship and Equity (GC&E) Outcomes

N/A

Methods of Instruction

Professor led discussion, directed reading and hands on labs

Text and other Instructional/Learning Materials

Text Book(s):

Farrell, Joyce. 2016. Microsoft® Visual C#® 2015: An Introduction to Object Oriented Programming (6th Edition.): Course Technology, Cengage Learning.

ISBN 10: 1-285-86023-3

ISBN 13: 978-1-285-86023-7

Classroom and Equipment Requirements

Computers and access to required software

Evaluation Scheme

⇨ Test 1: To be completed in week 8

⇨ Test 2: To be completed in week 14

⇨ Assignments: Four assignments to be completed in weeks 3, 6, 10 and 13

⇨ Quizzes: Lab exercises and quizzes upon the completion of each major topics

Evaluation Name	CLO(s)	EES Outcome(s)	GCE Outcome(s)	Weight/100
Test 1	1, 2	1		25
Test 2	8	3		25
Assignments	1, 2, 3, 4, 5, 6, 7, 9, 10	5, 9, 10, 11		40
Quizzes	1, 2, 3, 4, 5, 6, 7, 8	1, 2, 4		10
Total				100%

If students are unable to write a test they should immediately contact their professor or program Chair for advice. In exceptional and well documented circumstances (e.g. unforeseen family problems, serious

illness, or death of a close family member), students may be able to write a make-up test.

All submitted work may be reviewed for authenticity and originality utilizing Turnitin®. Students who do not wish to have their work submitted to Turnitin® must, by the end of the second week of class, communicate this in writing to the instructor and make mutually agreeable alternate arrangements.

When writing tests, students must be able to produce official College photo identification or they may be refused the right to take the test or test results will be void.

Student Accommodation

The Centre for Accessible Learning and Counselling Services (CALCS) (http://centennialcollege.ca/calcs) provides programs and services which empower students in meeting their wellness goals, accommodation and disability-related needs. Our team of professional psychotherapists, social workers, educators, and staff offer brief, solution-focused psychotherapy, accommodation planning, health and wellness education, group counselling, pscyho-educational workshops, adaptive technology, and peer support. Walk in for your first intake session at one of our service locations (Ashtonbee Room L1-04, Morningside Room 190, Progress Room C1-03, The Story Arts Centre Room 285, Downsview Room 105) or contact us at calcs@centennialcollege.ca, 416-289-5000 ext. 3850 to learn more about accessing CALCS services.

Use of Dictionaries

* Dictionary use is not permitted in test or examination settings.

Program or School Policies

N/A

Course Policies

N/A

College Policies

Students should familiarize themselves with all College Policies that cover academic matters and student conduct.

All students and employees have the right to study and work in an environment that is free from discrimination and harassment and promotes respect and equity. Centennial policies ensure all incidents of harassment, discrimination, bullying and violence will be addressed and responded to accordingly.

Academic honesty is integral to the learning process and a necessary ingredient of academic integrity. Academic dishonesty includes cheating, plagiarism, and impersonation. All of these occur when the work of others is presented by a student as their own and/or without citing sources of information. Breaches of academic honesty may result in a failing grade on the assignment/course, suspension or expulsion from the college.

For more information on these and other policies, please visit www.centennialcollege.ca/about-centennial/college-overview/college-policies.

Students enrolled in a joint or collaborative program are subject to the partner institution's academic policies.

PLAR Process

This course is eligible for Prior Learning Assessment and Recognition (PLAR). PLAR is a process by which course credit may be granted for past learning acquired through work or other life experiences. The PLAR process involves completing an assessment (portfolio, test, assignment, etc.) that reliably demonstrates achievement of the course learning outcomes. Contact the academic school to obtain information on the PLAR process and the required assessment.

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Topical Outline (subject to change):

Week	Topics	Readings/Materials	Weekly Learning Outcome(s)	Instructional Strategies	Evaluation Name	Evaluation Date
1	Course Overview, Reviewing basic elements of a C# program, control structures, etc. Advanced Method Concepts	Chapter 1, 2, 4 & 8	Upon the completion of this work the learner will have a good understanding of programming languages including the evolution of C# and the .NET framework. The basic elements of a C# program are reviewed. The student should be able to compile, run and build a C# application using currently available IDE. The learner will have a good understanding of methods and be able to use overloaded methods.	Lecture Demonstration Lab Session	Assignment 1	
2-4	Using classes and Objects	Chapter 9	Upon the completion of this work the learner will have a good understanding of the fundamental features of Object-Oriented Programming, classes and objects and the anatomy of a C# class. The student will be able to do the following: - List all the data and function members of a C# class. - Define and instantiate classes. - Use fields, constructors, the this keyword and the ToString() method. - Read and interpret UML class diagrams. - Know the difference between static and non-static members. - Be able to use accessibility modifiers. - Use auto-implemented properties. - Be able to declare and use enums. - Be able to use private and static constructors - Appreciate the difference between classes and structs The learner will also have a good understanding of the following: - Properties - Destructors - Overloading operators - Partial Classes - Nested Classes	Lecture Demonstration Lab Session	Assignment 2	Assignment 2 in week 3

Week	Topics	Readings/Materials	Weekly Learning Outcome(s)	Instructional Strategies	Evaluation Name	Evaluation Date
5	Exception Handling	Chapter 11 Lecture Handouts	Upon the completion of this work the learner shall be capable of writing code that catch/re-throw exceptions. The C# exception-handling model will be explored and the student will be introduced to .NET Exception hierarchy.	Lecture Demonstration Lab Session		
6	File I/O and Serialization	Chapter 14 Lecture Handouts	Upon the completion of this work the learner will be able to do the following: - Work with the computer file and directory structure. - Read from and write to streams with both binary and text data. - To serialize and deserialize data.	Lecture Demonstration Lab Session		
7	Test Driven Development	Lecture Handouts	Upon the completion of this work the learner will be able to create and use libraries and do test driven development.	Lecture Demonstration Lab Session	Assignment 3	
8	Object-Oriented Programming - Inheritance	Chapter 10 Lecture Handouts	Upon the completion of this work the learner shall be capable of designing classes that inherit from other classes. The student will study the relationship between base classes and derived classes and will be introduced to protected and internal members. The student will understand the use of the base, this, virtual, override, new, abstract and sealed keywords	Lecture Demonstration Lab Session	Test 1	Test 1 in the last class
9-10	Object-Oriented Programming – Polymorphism and Interfaces	Chapter 10 Lecture Handouts	Upon the completion of this work the learner will have a good understanding of polymorphism and implementing it in C#. Abstract classes and Interfaces will be used here to illustrate various implementations of polymorphism in C#.	Lecture Demonstration Lab Session	Assignment 4	
11	Collections	Lecture Handouts	Upon the completion of this work the learner will have a good understanding of Collections. The student shall be capable of using the unique properties of List, Dictionary, Stacks, and Queue	Lecture Demonstration Lab Session		
12-14	Using Controls and Event Handling	Chapter 12 & 13 Lecture Handouts	Upon the completion of this work the learner will have a good understanding of GUI programming concepts, such as windows, forms and events.	Lecture Demonstration Lab Session	Test 2	Test 2 in the class of week 14

Week	Topics	Readings/Materials	Weekly Learning Outcome(s)	Instructional Strategies	Evaluation Name	Evaluation Date
			The student shall be capable of implementing basic event handling for various Windows controls. The student will be able to use TextBox, Label, Button, ComboBox, CheckBox, RadioButton, GroupBox, NumericUpDown, Timer and DataGridView controls to build Gui applications			