

**Division of Applied Science & Management
School of Science
Spring, 2019**



COURSE OUTLINE

CPSC 128

Introduction to Object Oriented Programming I

3 CREDITS

PREPARED BY: Sinan Bulut

DATE: May 1, 2019

APPROVED BY:

DATE:

APPROVED BY ACADEMIC COUNCIL:

RENEWED BY ACADEMIC COUNCIL: (date)



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Division of Applied Science & Management
CPSC 128
Credit Course
Spring, 2019

CPSC 128 INTRODUCTION TO OBJECT ORIENTED PROGRAMMING 1

INSTRUCTOR: Sinan Bulut, PhD

OFFICE HOURS: by appointment

E-MAIL: sbulut@yukoncollege.yk.ca

CLASSROOM: A2702

TIME: Tues/Thurs 4:30 – 7:30

DATES: May 2 – June 27, 2019

COURSE DESCRIPTION

The goal of CPSC 128 is to introduce the student to the basics of computer science and programming. To this end it covers: techniques, methods, and tools for systematic development and maintenance of software systems and documentation; basic algorithms and data structures; and fundamental concepts of object oriented programming. The bulk of the course is spent practicing program design in order to reinforce the fundamental concepts and constructs. Good programming practices are emphasized throughout, including: top-down design, modularization, code re-use, debugging techniques, and creating useful documentation. While the language of choice for this course is Python, the learning outcomes should be transferable to other programming languages.

PREREQUISITES

Math 11. While no previous programming experience is required, any such experience is helpful.

EQUIVALENCY OR TRANSFERABILITY

Kwantlen College	KWAN CPSC 2nd (3)
Thompson Rivers University	TRU COMP 1130 (3)
Trinity Western University	TWU CMPT 160 (1)
	& TWU ISYS 100 lev (2)
University of British Columbia (Okanagan)	UBCO COSC 111 (3)
University of British Columbia (Vancouver)	UBC CPSC 1st (3)
University of the Fraser Valley UFV	COMP 150 (4)

University of Northern British Columbia UNBC CPSC 1XX (3)
University of Victoria UVIC CSC 110 (1.5)

See the <http://bctransferguide.ca/> for a complete list of transfers in British Columbia.

LEARNING OUTCOMES

A student who successfully fulfills the course requirements will have demonstrated the ability:

- to use the components and constructs necessary to implement efficient, reusable, extensible code
- to produce clearly written and well-documented code
- to evaluate programs through the careful application of appropriate testing techniques to assess their reliability and correctness
- to produce an object-oriented (OO) analysis and design for a problem
- to apply the principles of class inheritance, composition, and association to construct hierarchies of new classes
- to document the analysis, design, implementation and testing of a program constructed using OO principles

COURSE FORMAT:

Content: The course is divided into 12 modules (see above). Students will complete and submit eight assignments each of which covering a combination of these modules, and receive feedback.

Student-teacher interaction: Every effort will be made to provide rich student-teacher interaction. To this end students are able to interact with the instructor by email, discussion forum, or face to face at the Whitehorse campus of Yukon College.

Workload: Students typically take between 120 and 240 hours to complete the course.

ASSESSMENTS

The final grade of this course will be based on the following:

Assignments (65%): Eight assignments will be given that cover all of the material in the course. Note that all assignments have equal weight,

regardless of the total they are marked out of.

Final Examination (35%): A comprehensive final examination will be given at the end of the course. Students will write the exam at the Whitehorse campus of Yukon College.

EVALUATION

Assignments	65%
Final Exam	35%
Total	100%

REQUIRED TEXTBOOKS AND MATERIALS

No textbook is required for this course. All the necessary content is provided either through the course website or online resources.

ACADEMIC AND STUDENT CONDUCT

Information on academic standing and student rights and responsibilities can be found in the Academic Regulations located on the admissions page:

<https://www.yukoncollege.yk.ca/admissions>

PLAGIARISM

Plagiarism is a serious academic offence. Plagiarism occurs when a student submits work for credit that includes the words, ideas, or data of others, without citing the source from which the material is taken.

Plagiarism can be the deliberate use of a whole piece of work, but more frequently it occurs when students fail to acknowledge and document sources from which they have taken material according to an accepted manuscript style (e.g., APA, CSE, MLA, etc.). Students may use sources which are public domain or licensed under Creative Commons; however, academic documentation standards must still be followed. Except with explicit permission of the instructor, resubmitting work which has previously received credit is also considered plagiarism. Students who plagiarize material for assignments will receive a mark of zero (F) on the assignment and may fail the course. Plagiarism may also result in dismissal from a program of study or the College.

YUKON FIRST NATIONS CORE COMPETENCY

Yukon College recognizes that a greater understanding and awareness of Yukon First Nations history, culture and journey towards self-determination will help to build positive relationships among all Yukon

citizens. As a result, to graduate from ANY Yukon College program, you will be required to achieve core competency in knowledge of Yukon First Nations. For details, please see www.yukoncollege.yk.ca/yfnccr.

ACADEMIC ACCOMMODATION

Reasonable accommodations are available for students requiring an academic accommodation to fully participate in this class. These accommodations are available for students with a documented disability, chronic condition or any other grounds specified in section 8.0 of the Yukon College Academic Regulations (available on the Yukon College website). It is the student's responsibility to seek these accommodations. If a student requires an academic accommodation, he/she should contact the Learning Assistance Centre (LAC) at (867) 456-8629 or lac@yukoncollege.yk.ca.

TOPIC OUTLINE

0. Course start-up.

Part I: Procedural programming

- 1. Introduction to computer science.*
- 2. SIPO (sequence, input, processing and output) programming.*
- 3. Selection control structures.*
- 4. Repetition control structures.*

Part II: Object-based programming

- 5. Aggregate data types 1: Lists and strings.*
- 6. Functions.*
- 7. Aggregate data types 2: Dictionaries.*
- 8. Text files.*

Part III: Object-oriented programming

- 9. Object-oriented programming (OOP) 1: Encapsulation.*
- 10. Object-oriented design (OOD).*
- 11. Object-oriented programming (OOP) 2: Polymorphism and inheritance*
- 12. Unified modeling language (UML).*

Final Examination