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## CPSC 128 Object Oriented Programming 1

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**Start date:** Jan 5, 2015      **End date:** April 24, 2015

**Days & Times:** Not applicable (online course).

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### Course Description

The goal of CPSC 128 is to introduce the student to computer science through the design and implementation of object-oriented software. 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 as new elements are added to the student's knowledge of an OOP language. Good programming practices are emphasized throughout, including: top-down design, modularization, code re-use, debugging techniques, and creating useful documentation.

### Prerequisites

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

### Course Transferability

Kwantlen College	KWAN CPSC 2nd (3)
Simon Fraser University	SFU CMPT 212 (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)

## Learning Outcomes

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

- 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 use the components and constructs necessary to implement an OO program in 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 document the analysis, design, implementation and testing of a program constructed using OO principles.

## Course Content

The course content is divided into 12 modules that are grouped into three parts (plus a preliminary orientation module). Each post-orientation module represents a roughly equal amount of work. In this offering of the course one module should be completed each week, though students are free to proceed more quickly than this.

Several important topics, e.g. testing, debugging, and user interface programming, do not appear in the module list below because they are embedded throughout the course, beginning with an initial simple treatment and progressing via gradual refinement to a thorough presentation of the topic.

<i>Orientation</i>	<i>Completion deadline</i>
0. Course start-up.	<i>Jan 11</i>
<i>Part I: Procedural programming</i>	
1. Introduction to computer science.	<i>Jan 18</i>
2. SIPO (sequence, input, processing and output) programming.	<i>Jan 25</i>
3. Selection control structures.	<i>Feb 1</i>
4. Repetition control structures.	<i>Feb 8</i>
<i>Part II: Object-based programming</i>	
5. Aggregate data types 1: Lists and strings.	<i>Feb 15</i>
6. Functions.	<i>Feb 22</i>
7. Aggregate data types 2: Dictionaries.	<i>Mar 1</i>
8. Text files.	<i>Mar 8</i>
<i>Part III: Object-oriented programming</i>	
9. Object-oriented programming (OOP) 1: Encapsulation.	<i>Mar 22</i>
10. Object-oriented design (OOD).	<i>Mar 29</i>
11. Object-oriented programming (OOP) 2: Polymorphism and inheritance.	<i>Apr 6</i>
12. Unified modeling language (UML).	<i>Apr 12</i>
<i>Final Examination</i>	<i>Apr 24</i>

## **Delivery Methods/Format**

This is an online offering of CPSC 128.

*Content.* The course is divided into 12 modules (see above) and all the content for these modules is provided online. Web pages provide notes on the topics, and online videos demonstrating and illustrating key points and procedures.

*Coursework.* Students will complete and submit an assignment for each module, and receive feedback online.

*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.

*Scheduling.* **There is a minimum pace of one module per week.** This minimum pace is absolute: **Late assignments are not accepted.** However students may go faster than this to complete the course early or just to create a time cushion for themselves. Getting ahead can provide breathing room to sort out any difficulties you may encounter in the later modules.

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

## **Evaluation**

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

*Assigned work (50%):* Twelve assignments (one per module) 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 (50%):* 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.

N.B. There is no opportunity to rewrite the final examination, nor to write a supplemental examination.

## **Textbook**

No textbook is required for this course. All the necessary content is provided through the course websites.

## **Additional Equipment and Supplies**

You will require a computer with an internet connection and a modern browser. You will be installing the Python programming environment on the computer.

## **Plagiarism**

Plagiarism involves representing someone else's work as your own, without citing the source from which the material is taken. If the words of others are directly quoted or paraphrased, they must be documented according to standard procedures (APA). The resubmission of a paper for which you have previously received credit is considered a form of plagiarism.

Plagiarism is academic dishonesty, a serious academic offence, and will result in you receiving a mark of zero (F) on the assignment or the course. In certain cases, it can also result in dismissal from the college. And do not underestimate the impact such a situation will have on your reputation.

*More detailed guidelines on plagiarism in the context of programming will be provided as part of the online course materials.*

## **Students with disabilities or chronic conditions**

Reasonable accommodations are available for students with a documented disability or chronic condition. It is the student's responsibility to seek these accommodations. If a student has a disability or chronic condition and may need accommodation to fully participate in this class, he/she should contact the Learning Assistance Centre (LAC) at (867) 668-8785 or lassist@yukoncollege.yk.ca.