

APPLIED SCIENCE AND MANAGEMENT DIVISION

Object Oriented Programming I

3 Credit Course

Fall, 2014

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**Object Oriented Programming 1**

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**INSTRUCTOR:** Tim Topper, Ph.D.

**OFFICE HOURS:** You are encouraged to drop by my office any time, but if you want to ensure you will see me you should confirm my availability ahead of time.

**OFFICE LOCATION:** C2211

**CLASSROOM:** A2301

(SE Corner inside the Library)

**E-MAIL:** [ttopper@yukoncollege.yk.ca](mailto:ttopper@yukoncollege.yk.ca)

**TIME:** Tuesday & Thursday,(4:30–6:30pm)

**TELEPHONE:** 867-668-8775

**DATES:** September 3 – December 19, 2014

**Website:** MyYC + <http://courses.yukoncollege.yk.ca/~ttopper/CPSC128.F14/index.html>

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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.

**EQUIVALENCY OR 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.

### *Part I: Procedural programming*

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

### *Part II: Object-based programming*

4. Aggregate data types 1: Lists and strings.
5. Functions.

6. Aggregate data types 2: Dictionaries.
7. Text files.

*Part III: Object-oriented programming*

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

## **DELIVERY METHODS**

The twice-weekly classes are combined lecture/lab sessions.

## **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.

## **REQUIRED TEXTBOOKS AND MATERIALS**

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

### **Additional Equipment and Supplies**

It will be most convenient for you if you have a computer with an internet connection and a modern browser that you can install the Python programming environment onto so you can work at home. If you don't you can always use the machines in the computer labs at the College, all of which have Python installed on them.

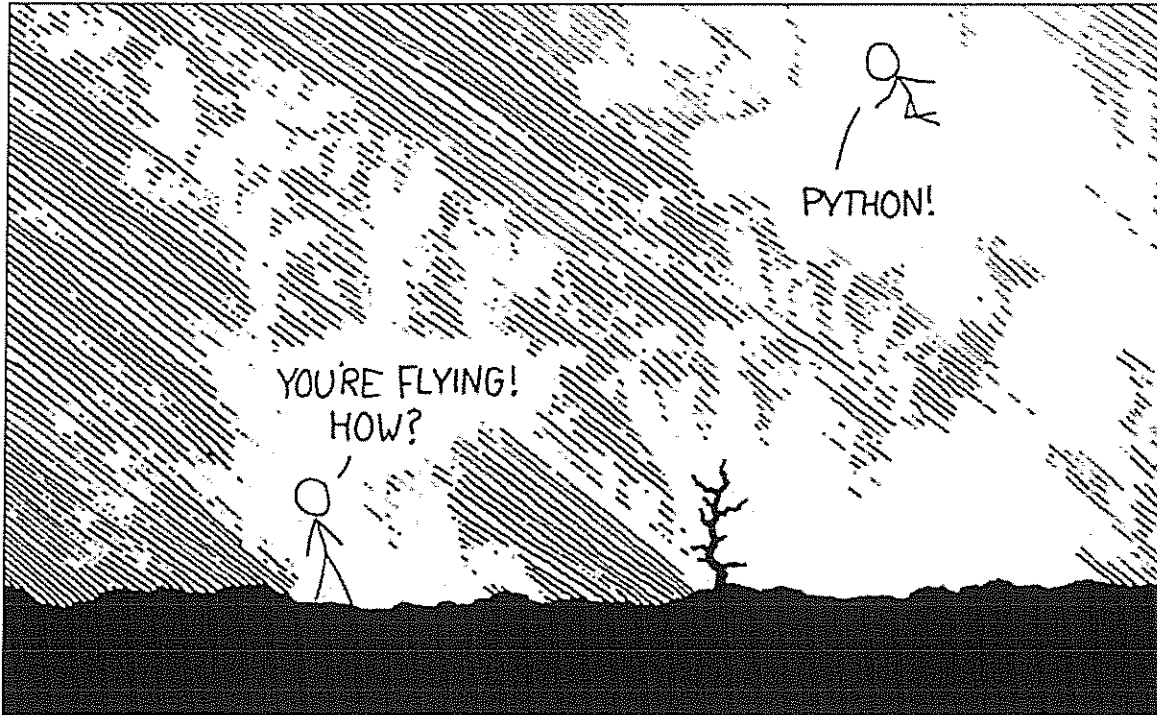
## **PLAGIARISM**

Plagiarism is a serious academic offence. Plagiarism occurs when students present the words of someone else as their own. Plagiarism can be the deliberate use of a whole piece of another person's writing, but more frequently it occurs when students fail to acknowledge and document sources from which they have taken material. Whenever the words, research or ideas of others are directly quoted or paraphrased, they must be documented according to an accepted manuscript style (e.g., APA, CSE, MLA, etc.). Resubmitting a paper 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.

### **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) 668-8785 or [lassist@yukoncollege.yk.ca](mailto:lassist@yukoncollege.yk.ca).



I LEARNED IT LAST NIGHT! EVERYTHING IS SO SIMPLE!  
|  
HELLO WORLD IS JUST  
print "Hello, world!"

I DUNNO...  
DYNAMIC TYPING?  
WHITESPACE?

COME JOIN US!  
PROGRAMMING IS FUN AGAIN!  
IT'S A WHOLE NEW WORLD  
UP HERE!




BUT HOW ARE YOU FLYING?

|  
I JUST TYPED  
import antigavity

THAT'S IT? |

... I ALSO SAMPLED  
EVERYTHING IN THE  
MEDICINE CABINET  
FOR COMPARISON.



|  
BUT I THINK THIS IS THE PYTHON.