

International Baccalaureate
Standard Level Computer Science

CS 471 Fall 2015 Year One

Professor: Dr. Anthony Schultz, Academic Building, tony.schultz@ef.com

Extra Hours: Mondays 4-6 PM Room 119

Textbook: *Java: Software Solutions* 3rd edition, by John Lewis

Course Outline:

I. Week One - September 14th-18th

A. Zero

Welcome and personal introductions
Review syllabus and structure of the course
Basics of bash directory navigation and commands
Basics of Git and L^AT_EX
Open Source, intellectual property, Creative Commons, Free Software

B. Hello World

Basic Python
My first program
Variables and assignments
Primitive data types (integers, floats, booleans)
Strings
Arithmetic expressions (+, -, *, /, %)
Conditional statements (if, else)

II. Week Two - September 21st - 25th

A. Boolean Algebra

Equality, relational and boolean operators
Boolean arithmetic (and, or, not)

B. Loops

For loops
While loops

C. Arrays

III. Week Three - September 28th - October 2nd

A. Basic Programming

- Program structure
- Algorithm design
- Nested loops

B. Numbers

- Bases (binary, decimal, hexadecimal, char)
- Bits and bytes
- Base conversion

IV. Week Four - October 5th - 9th

A. Libraries

- Importing libraries
- Standard libraries
- Mathematics libraries

B. Useful Modules, Packages and Libraries

- Basic graphics

V. Week Five - October 12th - 16th

A. Functions

- Writing functions

VI. Week Six - October 19th - 23rd

A. Introduction to Java

- Basics of Java
- Hard typed languages

B. Objects I

- Introduction to objects
- Object instances
- Object methods

VII. Week Seven - October 26th - 30th

A. Objects 2

- Writing objects
- Writing object methods

VIII. Week Eight - November 2nd - 6th

A. Classes 1

- Basics of classes
- Writing classes
- Constructors
- Interfaces

IX. Week Nine - November 9th - 13th

A. Classes 2

- Subclasses
- Inheritance
- Super reference
- Polymorphism

X. Week Ten - November 16th and 20th

A. Graphical User Interfaces

- Basic GUI

B. Input and Output

- Keyboard events
- Text file input
- Text file output

XI. Week Eleven - November 23rd - 25th

A. Review

GitHub Work Portfolio: This course will require you to write code frequently. To get credit all your code projects must be uploaded to GitHub using the git command line. This will constitute 20% of your grade.

Homework: There will be homework in this course. Homework will be completed and kept in a notebook or binder. This will constitute 20% of your grade.

Papers: There will be two papers in this class. Papers will be written in L^AT_EX. They make up 20% of your grade.

In-Class Assessments: In-class assessments throughout the semester will make up 20% of your grade.

Final: The final will have an in-class and take-home portion. It will make up 20% of your grade.