

Course Outline

Internet Programming and Development – LEA.BN

A. General Information

Course name	Programming I - Introduction to Programming		
Program Name	Internet Programming and Development		
Course number	420-PV3-AB		
Start date	10/30/2020		
End date	11/11/2020		
Day(s) and times	8h30 – 14h00 – ½ hour lunch		
Classroom/lab number	On-Line		
Ponderation <i>Ratio of lecture, practical and homework hours</i>	1-2-3		
Hours	45		
Credits	2.00		
Competency statement(s) and code(s)	DC76: Apply data structures and algorithms to programming		
Prerequisite (if any)	None		
Semester	Fall 2020 - IPD-24		
Teacher	Gregory Prokopsku		
Teacher's contact info	MIO		

B. Introduction

This course is part of the Internet Programming and Development program leading to the *Attestation d'études collégiales* (A.E.C). It should be taken in the 1st semester of the program.

This course begins with an introduction of flow charts used to model simple algorithms and decision-making structures. These are then implemented using the Java programming language, where the student learns about program structure, variable types, passing parameters, control structures (if/else, switch, do-while, while, for) as well as the creation and use of subroutines (methods) and arrays. The student also gains a basic understanding of computer program structure, algorithm design and implementation and basic input-output interactions with the user.

The student will see, systematically, how a Java program works and how it accesses a computer's resources and achieves functionalities through the Java Virtual Machine (JVM). The focus of this course will be the acquisition of base skills and tool knowledge to create small programs and functions in the context of command-line software tools, with logical and imperative flows.

C. Course Objectives

By the end of this course, students should be able to perform the following:

Competency code(s) and statements	Element(s) of the competency One per row	Performance criteria (if applicable)
DC76: Apply data structures and algorithms to programming	E1 .Analyze the problem	P1.1 Correct specification of input data. P1.2 Correct specification of output data. P1.3 Correct specification of the nature of the procedure. P1.4 Correct identification of the conditions for executing the algorithm. P1.5 Proper identification of the algorithms to be created.
	E2. Organize data in memory	P2.1 Analysis of the context in which the data is to be used. P2.2 Comparison of the features of the different data structures. P2.3 Choice of appropriate data structures. P2.4 Correct creation of arrays, linked lists, stacks, queues, lists, trees in a programming language.
	E3. Model the classes	P3.1 Analysis of the context in which the data is to be used. P3.2 Comparison of the features of the different data structures. P3.3 Choice of appropriate data structures. P3.4 Correct creation of arrays, linked lists, stacks, queues, lists, trees in a programming language.
	E4. Produce algorithms for the methods	P4.1 Choice of a way to represent algorithms that is in accordance with company requirements. P4.2 Definition of a logical sequence of operations. P4.3 Identification of processing structures appropriate for each operation. P4.4 Search for an effective algorithmic solution. P4.5 Precise representation of the chosen algorithmic solution. P4.6 Inclusion of all data necessary to interpret the algorithm.

Competency code(s) and statements	Element(s) of the competency One per row	Performance criteria (if applicable)
		P4.7 Appropriate verification of algorithm correctness. P4.8 Accurate representation of algorithms.
	E5. Translate the algorithm into the programming language	P5.1 Effective use of environment editing features. P5.2 Application of the syntax and semantic rules specific to the language used. P5.3 Rigorous application of coding standards. P5.4 Appropriate application of the principles of structured programming. P5.5 Judicious exploitation of the language's possibilities. P5.6 Recording of pertinent comments in accordance with business requirements.
	E6. Program the classes	P6.1 Appropriate choice of instructions, types of primitive data and data structures.
	E7. Compile the program	P7.1 Effective use of the environment's compilation features. P7.2 Detection of compilation errors. P7.3 Correction of compilation errors.
	E8. Validate the program	P8.1 Efficient use of the environment's execution and debugging features. P8.2 Correct preparation of the test cases necessary for the verification of the functioning of the program. P8.3 Accurate interpretation of the results. P8.4 Appropriate debugging of the program according to the algorithm. P8.5 Verification of the pertinence of the solution, given the initial situation. P8.6 Identification of the errors and deficiencies of the algorithmic solution developed. P8.7 Appropriate modification of the algorithmic solution.

D. Evaluation Plan

Evaluation	%	Approximate date	Link to competenc(ies) and element(s)
Quiz 1	33.33		E1-8
Quiz 2	33.33		E1-8
Quiz 3	33.33		E1-8

E. Course Content and Schedule

Date	Objective/Element	Specific content	In class	Location	Online
Class 1		What is Java, JDK, IDE, simple Java programs, types, computations, console output, basic control structures, compilation and runtime errors	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Class 2		Console input using Scanner, more on variables, expressions, operators meaning and precedence, casting primitive types	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Class 3		Quiz 1 , more practice, loops and their types, conditional expressions	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Class 4		Debugger use, program execution tracing, ASCII table and Unicode, more operations on Strings	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Class 5		Arrays, loop equivalence, more practice	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Class 6		Quiz 2 , more practice	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Class 7		Creating methods, heap and garbage collection, call stack, pass by value, pass by reference	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Class 8		More practice	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Class 9		Quiz 3	<input type="checkbox"/>		<input checked="" type="checkbox"/>
<i>Note: the above schedule is tentative. In order to improve students' learning results and experience teacher reserves the right to modify the order and amount of time spent on topics listed and/or substitute one topic for another as long as it fulfills the requirements of competencies in this course.</i>					

F. Required Textbooks / Materials / Course Costs

Title / Item Name	Cost

G. Bibliography (if applicable)

Add resources here (e-books, articles, videos, websites, etc.)

All necessary materials will be provided by the teacher or available online free of charge.

Java How to Program, Early Objects 11th edition; Deitel & Deitel. Pearson \$209

Introduction to Java Programming; Y. Daniel Liang. Pearson \$200

H. Teaching Methods

The course is a combination of theory and practical work. Students will be required to:

- Listen to lectures
- Watch demonstrations
- Accomplish regular work in the laboratory
- Work in groups of 1 to 3 students for a project

It requires your individual presence and your active, consistent and sustained participation in your individual work. Your individual responsibilities are to complete the work assigned and be ready to work at the start of each class.

Hands on experience is mandatory to your success in this course. Homework assignments or project milestones are due on the day specified for handing in the assignment, at 11:55pm if no time is specified.

- Lectures/Demonstrations: Important material from the text and outside sources will be covered in class. You should plan to take careful notes as not all material can be found in the texts or readings. Discussion is encouraged as is student-procured, outside material relevant to topics being covered.
- Assignments: Review Assignments, Case Problems, Concepts Reviews, Skills Reviews, Independent Challenges and other projects and readings will be periodically assigned to help support and reinforce material in the course. These assignments may require the application of various software applications.
- Assignment submission: Assignments submission can be done with Lea or a Cloud Source Control tool, as detailed in class.
- Tests: The exams will be closed book/note and will test assigned readings and material discussed in class.
- Practical Test: The practical test will be on a lab computer only, with access to all online documentation, but no communication between students (be it electronic or verbal).
- Team Project (if any): The project focuses on methodologies and tools seen in this course. This project is structured to be small, but somewhat realistic given the time available in the course.
- Classroom Activity: Participation and Discussion

- JAC Portal: All material will be distributed on the JAC Portal. Class notes, instructional material, and student assignments will be posted on the class website. Students are encouraged to go to the website <https://johnabbott.omnivox.ca/> in order to obtain file downloads and view other items of interest throughout the semester. |

I. Departmental Policies

Please refer to the following documents concerning policies in place at the Centre for Continuing Education:

[Summary of Continuing Education Departmental Policies and Guidelines \(June 2020\)](#)

[Online Civility and Student Code of Conduct \(Continuing Education version\) \(June 2020\)](#)

J. Classroom Policies

Policy to ensure that issues relating to late submission, or resubmission, of work to be dealt with in an equitable manner

A teacher may deduct up to 10% per calendar day for late assignments that are submitted without a valid excuse.

| |

Policy dealing with the expectations of classroom behaviour, including use of cell phones, laptops and other technology | |

Other | |

K. College Policies

Please refer to the following document which summarizes some of the key policies in place at the College. See the specific policies for more information.

[Summary of College Policies and Guidelines \(June 2020\)](#)

Cheating and Plagiarism

Please refer to the following documents concerning cheating and plagiarism at John Abbott College:

[Policy 7: Institutional Policy on the Evaluation of Student Achievement \(IPESA\)](#)

See articles **9.1** and **9.2**.

[Academic Integrity: Cheating and Plagiarism Procedure](#)

Religious Holidays

Please refer to the following document concerning absences:

[Policy 7: Institutional Policy on the Evaluation of Student Achievement \(IPESA\)](#)

See articles **3.2.13** and **4.1.6**.

Student Rights and Responsibilities

Please refer to the following document concerning student rights and responsibilities:

[Policy 7: Institutional Policy on the Evaluation of Student Achievement \(IPESA\)](#)

See articles **3.2** and **3.3**.

Changes to Course Evaluation Plan in the Course Outline

Please refer to the following document concerning absences:

[Policy 7: Institutional Policy on the Evaluation of Student Achievement \(IPESA\)](#)

See article **5.3**.

Student Code of Conduct

Please refer to the following document concerning the College's student code of conduct and discipline procedures:

[Policy 13: Policy on Student Conduct and Discipline Procedures \(September 15, 2009\)](#)