1. **Course:** CPSC 233: Introduction to Computer Science for Computer Science Majors II
   **Lecture Sections:**
   L01, TR 9:00-11:45, Ahmed Mostafa, ICT 555, aezzelde@ucalgary.ca
   Office Hours: TR 12:00-13:00

   **Course Website:** D2L

   Computer Science Department Office, ICT 602, 220-6015, cpsc@cpsc.ucalgary.ca

2. **Prerequisites:** CPSC 231
   ([http://www.ucalgary.ca/pubs/calendar/current/computer-science.html#3620](http://www.ucalgary.ca/pubs/calendar/current/computer-science.html#3620))

3. **Grading:** The University policy on grading and related matters is described in sections F.1 and F.2 of the online University Calendar. In determining the overall grade in the course the following weights will be used:
   - Assignments 40%
   - Midterm Exam 25%
   - Final Exam 35%

   *500* (Tuesday June 14th, 2016 during class time in ICT 122)

   This course will have a Registrar’s Scheduled Final Exam.

   **Special Regulations affecting the Final Grade:** Each of the above components will be given a percentage grade. The final grade will be calculated using the weights given above and then converted to a final letter grade using the attached table. To achieve an overall grade of C- or better in the course, you must achieve a minimum grade of C- or better in the final exam and complete all assignments.

4. **Missed Components of Term Work:** The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar. Section 3.6. It is the student’s responsibility to familiarize themselves with these regulations. See also Section E.6 of the University calendar.

5. **Scheduled Out-of-Class Activities:** REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME ACTIVITY. If you have a clash with this out-of-class activity, please inform your instructor as soon as possible so that alternative assignments can be arranged.

6. **Course Materials:**

   **Online Course Components:** None.

7. **Examination Policy:** Closed book. No aids or any kind are allowed. Students should also read the Calendar, Section G, on examinations.

8. **Approved Mandatory and Optional Course Supplemental Fees:** None.
9. **Writing across the Curriculum Statement:** In this course, the quality of the student’s writing in the weighted components of the course will be a factor in the evaluation of these components. See also Section E.2 of the University Calendar.

10. **Human Studies Statement:** See Section E.5 of the University Calendar.

11. **OTHER IMPORTANT INFORMATION FOR STUDENTS:**

   a) **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offense that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under Section K, Student Misconduct to inform yourself of definitions, processes and penalties.

   b) **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on assembly points which can be found in each classroom and building.

   c) **Student Accommodations:** Students needing an Accommodation because of a Disability or medical condition should contact Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities available at http://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities_0.pdf. Students needing an Accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to the Associate Head of Computer Science. Dr. Ben Stephenson, by email bdstephe@ucalgary.ca or phone 403-220-6781.

   d) **Safewalk:** Campus Security will escort individuals day or night (http://www.ucalgary.ca/security/safewalk/). Call 403-220-5333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.

   e) **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). As one consequence, students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information see also http://www.ucalgary.ca/secretariat/privacy

   f) **Student Union Information:** VP Academic (403) 220-3911 suvpaca@ucalgary.ca SU Faculty Rep (403) 220-3913 science1@su.ucalgary.ca, science2@su.ucalgary.ca and science3@su.ucalgary.ca. Student Ombuds Office: (403) 220-6420 ombuds@ucalgary.ca, http://ucalgary.ca/provost/students/ombuds

   g) **Internet and Electronic Device Information:** You can assume that in all classes that you attend your cell phone should be turned off unless instructed otherwise. All communications with other individuals via laptop computers, cell phones or other devices connectable to the internet in not allowed during class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.

   h) **U.S.R.I.:** At the University of Calgary feedback provided by students through the Universal Student ratings of Instruction (USRI) survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses (www.ucalgary.ca/usri). Your responses make a difference – please participate in USRI surveys.

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Department Approval____________________________ Date__________________________

Associate Dean’s Approval for out of regular class-time activity: ___________________________Date:__________________________

*A signed copy of this document is kept on file in the Computer Science Main Office ICT 602*
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Introduction to Computer Science II

Detailed Syllabus

Introduction

Programming Language Paradigms
Origin of Java
Why Java? (Java Features)
The Java Software Development Kit (SDK)
A Simple Application
A Simple Applet

Java Language Fundamentals

Identifiers
Comments
Primitive Data Types
   Integers
   Floating Point
   Boolean
   Character
   Wrapper Classes
Identifiers
   Variables
   Constants
Strings
Object References
Default Initializations
Statements
Assignment Statements
Expressions
Operators
   Arithmetic
   Compound Assignment
   Increment and Decrement
   Relational
   Logical
   Bitwise
Operator Precedence and Associativity
Type Casting
   Implicit
   Explicit
String Operations
Data Conversions
Basic Input and Output

Control Structures

Sequential Structure
   Blocks
Local Variables
Selection Structures
   The if and if-else Statements
   Ternary Operator
   The switch Statement
Iteration Structures
   The for Loop
   The while Loop
   The do-while Loop
   The continue and break Statements
   Infinite Loops

Object-Oriented Concepts

   Introduction
   Pillars of OOP
      Abstraction
      Encapsulation
      Inheritance
      Polymorphism
What is an Object?
   State
   Behavior
   Object Identity (Instance)
What is a Class?
   Class Interface
   Class Implementation
Representing a Class in UML
   Class Symbol
   Attributes
   Operations
   Visibility

Java Class Fundamentals

   The Class Declaration
   Fields and Methods
      Instance Variables
      Class Variables
      Instance Methods
      Class Methods (static)
      Method Parameters
      The return Statement
      Local Variables in Methods
   Access Control
   The main() Method
   Creating Objects
   Constructors
   The this Keyword
   Method Overloading
   Garbage Collection
   The finalize() Method
Arrays

Introduction
One-Dimensional Arrays
  Declaring Array Variables
  Creating Array Objects
  Indexing Array Elements
  Array Length
  Array Bounds Checking
  Initialization Lists
  Passing Arrays and Array Elements to Methods
  Array Assignment
Two-Dimensional Arrays
  Declaring and Creating Two-Dimensional Arrays
  Initialization Lists
  Indexing Array Elements
Arrays of Objects
Arrays of Strings
Enhanced for Loop
Enumerated Types

Relationships Among Classes

Single and Multiple Inheritance
Concrete Classes
Abstract Classes
Polymorphism
Aggregation and Composition
Association
Class Diagrams in UML
  Class Relationships
  Multiplicity

Inheritance in Java

The extends Keyword
Implicit Subclassing
The super Keyword
Inheriting Structure
Inheriting Behavior
Access when Extending
Constructors in Extended Classes
The final Keyword
Aggregation/Composition in Java
Association in Java
Type Compatibility and Conversion
Runtime Polymorphism

Enhanced Class Design
Thread Scheduling
Coordinating Threads
Synchronized Methods
Daemon Threads
Deadlocks

File Input and Output

Streams and Files
Writing Text Files
Reading Text Files
Parsing Text Streams
Writing Binary Files
Reading Binary Files