ALGONQUIN COLLEGE

Due to COVID-19, this course may be offered via remote delivery in 2021-22 (unless the course is already being delivered fully online). Your course may have changes that are not reflected in the Course Outline. Please refer to this Course Section Information document for updated information about your course. If you have questions, please contact your professor.

SCHOOL OF ADVANCED TECHNOLOGY

ICT - Applications & Programming
Computer Engineering Technology – Computing Science

COURSE SECTION INFORMATION (CSI)
Term: Fall 2021

Course: **CST8221 – Java Application Programming**
Section: **300**
Program: **Computer Eng. Technology - Comp. Science**

Professor's Name:	Paulo Sousa / Daniel Cormier
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Learning Resources

Required Resources

- The **textbook** and additional references for this course are the same as those listed in the approved **Course Outline** available on Brightspace:
  - **Main book (required):**
    - ***Java How to Program, Early Objects****, 11th Edition, by Deitel and Deitel, Published by Pearson Education Inc., 2018, ISBN-13: 978-0-13-474335-6.*
  - **Additional Reference:**
    - ***Java Swing****, Second Edition, by Marc Loy, Robert Eckstein, Dave Wood, James Elliott, Brian Cole, et al., Publisher: O'Reilly Media,ISBN:978-0-596-00408-8*

- ***Learn JavaFX 8-Building User Experience and Interfaces with Java 8***, First Edition, by Kishori Sharan, Publisher: Apress, ISBN 978-1-4842-1143-4, eBook ISBN 978-1-4842-1142-7

Additional Reference/Supporting Resources (specific to this course section)

- **JDK -** Java Development Kit version 8 or later.
- **IDE Environment** (options below)
  - **Eclipse IDE** for Java Developers version 2020-03 or later.
  - **Apache NetBeans IDE** (version 10 or later).
  - **VS Code:** version 1.5 or later.
- **DataBase** (options below)
  - **MySql** (https://www.mysql.com/) **/ MariaDB** (https://mariadb.org/) updated version.
  - **PostgresSQL** (https://www.postgresql.org/) updated version.
    - **Note:** Database connectors / drivers developed to Java will be required.
- **Auxiliary tools:**
  - **Git** / **Github access** for control version system (especially working in pairs): Download: https://git-scm.com/downloads

- **Additional (recommended) resources for Lectures:**
  - **Microsoft Word**: please check the resources in **Office 365** using your AC Credentials (or any other .DOC / .DOCX editor);
  - Any **plain** / standard editor (suggested: **Notepad++** - https://notepad-plus-plus.org/).

Evaluation Breakdown

Assessment	Mark	CLRs
Assignments (3): week 5 (5%), 10 (20%), 14 (15%)	40%	1,2,3,4,5
Lab Activities (demos) - week 2, 4, 6, 10, 12 (1% each)	5%	1,2,3,4,5
Hybrid Quizzes – *week 1,2,3,4,5,6,9,10,11,12* (0.5% each)	5%	1,2,3,4,5
Practical Component	***50%***	***1,2,3,4,5***
Midterm exam: week 7 (20%)	20%	1,2,3,4
Final Exam: week 15 (30%)	30%	1,2,3,4
Theoretical Component	***50%***	***1,2,3,4,5***
Total Marks	***100%***	***1,2,3,4,5***

- **Assessments** (by name and number) corresponding to assessment categories in the Course Outline's Predefined Evaluation/Earning Credit section
  - **Assignments:** Practical part related to mini projects (can be done individually or by teams – *only 2 students from the same lab session*).
  - **Lab activities**: Demos where progressive assignment development is shown – the marks are individual (even when assignment is done in pairs).
  - **Hybrid assignments**: Additional task related to assignments (can be submitted by teams – but obeying the same teams from Assignments). These activities are related to additional topics that will be also covered in the exams.
- Percentage weight of each assessment adding up to 100%.
- **Extra bonus** can be given under the criteria defined by professors (both lectures and labs). So, participation and practice is highly recommended!

Learning Schedule *(subject to change with notification)*

Date	Weekly Theme and Learning Outcomes	Learning Activities	Assessments (%)	Resources	CLRs
Week 1 Sep 9-11	**Course overview** • GUI fundamentals. • Basic principles of GUI design.	**Remote lectures** • **Hybrid Activity (1):** Review - Anonymous Inner Classes. • **Lab:** Preparing environment - Inner classes and basic Java GUI - Lambda expressions in Java 8	• Hybrid quiz 1: quiz solution (0.5%). • Initial labs – Configuration – Preparing Lab 1	• Topic specific resources are included in the course materials available on Brightspace. • Chapter 26, 35: Swing GUI Components – Part I • Chapter 12, 13: Java FX Basics	1
Week 2 Sep 12-18	**Introduction to Java GUI API – AWT, Swing, JavaFX.** • Basic concepts • Components, Controls and Containers	**Remote lectures** • **Hybrid Activity (2):** UI Containers • **Lab:** Basic components, controls, and containers	• Hybrid quiz 2: quiz solution (0.5%). • **Demo Lab1** – Basic GUI **(1%)**	• Topic specific resources are included in the course materials available on Brightspace. • Chapter 26: Swing GUI Components – Part I: Chapter 12 , 13: JavaFX Basics	1,2
Week 3 Sep 19-25	**Event Handling** • Standard Layout Managers • Advanced controls.	**Remote lectures** • **Hybrid Activity (3):** Standard Layout Managers. • **Lab:** Event Handling	• Hybrid quiz 3: quiz solution (0.5%). • Preparing Lab 2 – Additional GUI components	• Topic specific resources are included in the course materials available on Brightspace	1,2

Date	Weekly Theme and Learning Outcomes	Learning Activities	Assessments (%)	Resources	CLRs
				• Chapter 26: Swing GUI Components – Part I • Chapter 12, 13: JavaFX Basics	
Week 4 Sep 26 – Oct 2	**UI Components and Controls** • Text input / output. • Choice	**Remote lectures** • **Hybrid Activity (4):** Text input / output – • **Lab**: UI Components – Text input / output – choice.	• Hybrid quiz 4: quiz solution (0.5%). • **Demo Lab2** – Additional GUI components **(1%)**	• Topic specific resources are included in the course materials available on Brightspace • Chapter 35 : Swing GUI Components – Part II • Chapter 12 , 13: JavaFX Basics	1,2
Week 5 Oct 3–9	**UI Components and Controls** • Menus • Toolbars	**Remote lectures** • **Hybrid Activity (5):** Components – Dialogs • **Lab**: Working on Assignment 1.	• Hybrid quiz 5: quiz solution (0.5%). • **Assignment 1 GUI Application – Part I (10%)**	• Topic specific resources are included in the course materials available on Brightspace. • Chapter 35 : Swing GUI Components – Part II • Chapter 12 , 13: JavaFX Basics	1,2
Week 6 Oct 10–16	**Design Patterns** • OOP and Design Patterns. • MVC Design Pattern. • Observer / Observable DP • Java Application Deployment	**Remote lectures** • **Hybrid Activity (6,7):** UI Components – progress monitors – file dialogs • **Lab:** Introduction to assignment 2	• Hybrid quiz 6: quiz solution (0.5%). • *Late A1 submission (2.5%).* • **Demo Lab 3** - More about GUI application **(1%)**	• Topic specific resources are included in the course materials available on Brightspace • Chapter 35: Swing GUI Components –Part II • Chapter 12, 13: JavaFX Basics	1,2
Week 7 Dec 5-11	**Revision – Exam 2** • OO – GUI Components • **Mid-term Exam**	**Remote lectures** • *[No hybrid: Exam preparation]* • Course Review	• **Midterm Exam (20% of term mark)**	• Topic specific resources are included in the course materials available on Brightspace • Chapter 27: Graphics and Java 2D	1,2,3, 4,5
Week 8 Oct 24-30	Term Break	Term Break	Term Break	Term Break	-
Week 9 Oct 31- Nov 6	**Java Networking Basics** • Using TCP/IP Sockets	**Remote lectures** • **Hybrid Activity (11):** Network basics	• Hybrid quiz 7: quiz solution (0.5%).	• Topic specific resources are included in the course materials	4

Date	Weekly Theme and Learning Outcomes	Learning Activities	Assessments (%)	Resources	CLRs
		• **Lab:** Producer / Consumer - Design Pattern using threads	• Preparing Lab 4 – Networking	available on Brightspace. • Chapter 28: Networking	
Week 10 Nov 7-13	**Java Networking Basics** • Using Datagram Sockets (UDP). • Manipulating URLs • Channels and not-blocking I/O	**Remote lectures** • **[Hybrid Activity (12):** Sockets communication • **Lab:** Working on Assignment 2	• Hybrid quiz 8: quiz solution (0.5%). • **Demo Lab4** – Synchronization and Networking **(1%)** • **Assignment 2 GUI Application – Part II (15%)**	• Topic specific resources are included in the course materials available on Brightspace. • Chapter 28: Networking	4
Week 11 Nov 14-20	**Java Concurrency (Multithreading)** • Life Cycle of a Java Thread. • Thread Priorities and thread Scheduling	**Remote lectures** • **Hybrid Activity (10):** Swing GUI and threads	• Hybrid quiz 9: quiz solution (0.5%). • *Late A2 submission (10%).* • Preparing Lab 5 – Concurrency	• Topic specific resources are included in the course materials available on Brightspace • Text chapters: review	2,3
Week 12 Nov 21-27	**Java Multithreading** • Threads Synchronization. • Classes and Interfaces in Concurrent Packages • Executor Framework	**Remote lectures** • **Hybrid Activity (10):** Swing GUI and threads • **Lab:** Basic multithreading	• Hybrid act 10: quiz solution (0.5%). • **Demo Lab 5** - Database **(1%)**	• Topic specific resources are included in the course materials available on Brightspace. • Chapter 23: Concurrency (Multithreading)	2,3
Week 13 Nov 28-Dec 4	**Java Database Connectivity** • JDBC Architecture. • JDBC Configuration • **Review of course material**	**Remote lectures** • **Lab:** Working on Assignment 2 • **Lab:** Basic JDBC	• Preparing final assignment.	• Topic specific resources are included in the course materials available on Brightspace. • Chapter 24: Accessing Databases with JDBC	2,5
Week 14 Dec 5-11	**Java Application Deployment** • Software Engineering Review Best Practices	**Remote lectures** • *[No hybrid: Exam preparation]* • Course Review	• Course Review • *Preparing Final Exam* • **Assignment 3 Distributed Application (15%)**	• Topic specific resources are included in the course materials available on Brightspace • Chapter 27: Graphics and Java 2D	1,2,3, 4,5

Date	Weekly Theme and Learning Outcomes	Learning Activities	Assessments (%)	Resources	CLRs
Week 15 *Dec 12-18*	**Final Exam**	Final Exam	**Final Exam (30%)**	• All the above	1,2,3, 4,5

General Schedule

Activity	W01	W02	W03	W04	W05	W06	W07	W08	W09	W10	W11	W12	W13	W14	W15	Total
Assignments					10			-		15				15	-	**40**
Lab demos		1		1		1		-		1		1			-	**5**
Hybrid quiz	0.5	0.5	0.5	0.5	0.5	0.5		-	0.5	0.5	0.5	0.5			-	**5**
Practical	-	-														**50**
Mid-term							20	-							-	**20**
Final exam								-							30	**30**
Theoretical																**50**
Total																**100**

Other Important Information

- **GENERAL INFO:**

  - Please consult the **Course Outline** for important information about attendance and classroom policies specific to the course.
  - Please consult the Evaluation/Earning Credit section of the **Course Outline** for the list of Course Learning Requirements validated by assignments and tests.
    - This time, some small differences are coming from the CSI:
  - Please consult the Assignment Submission Standard and Assignment Marking Guide on Brightspace.

- **ASSIGNMENTS' SUBMISSIONS:**

  - All submissions can be done **individually** or in **teams** (2 students) under **confirmation** of Lab professors.
    - The team must be **identified** and previously informed to Lab professor (at least 2 weeks before the due date).
    - Students must belong to the **same Lab session**.
    - **TIP:** The team development is highly recommended due to the peer discussion.
  - Submissions has always a due date on **Saturday's** midnight.

- Late assignments may be submitted for credit with a deduction depending on how late the work is submitted:
  - Up to 1 week after the due date, 50% penalty.
  - After this, *no marks* will be considered.
- Before each assignment, labs are required to show the progress of development activities.
  - As you should know, demo labs are not optional, but **mandatory**. Use this opportunity to improve your skills.

HYBRID QUIZES SUBMISSIONS:

- During the course, Hybrid materials will be released on **Monday**'s and the submission must be done during the corresponding week until the following **Saturday**.
- Submissions has always a due date also on **Saturday's** midnight.
  - After this, *no marks* will be considered.
- Because hybrid activities are part from your course, marks are related to question answers.
- Remember that the answer for questions can be done in teams (the same from Assignments).

REQUIRED PRACTICES:

- About **communications**:
  - Communications must be done using your **Algonquin email** (external emails may not be considered).
  - In communications, please include your **Student Number** and your **Session** (to make it easier to identify you).
  - When you are sending communications related to team activities, please include your partner as copy.

- About **exams**:
  - The **cameras are mandatory** for exams (including mid-term and final exam).
  - Please check the dates and, in case of conflicts / problems, advice at least with 2 weeks of anticipation.
  - During your exams, you need also to show your credentials (ex: student ID) when required.

- About **zoom** sessions:
  - Because we are remote, Zoom is the official tool to be used during sessions.
  - Your **name** when entering in **Zoom** sessions should match with your real name (especially if you are using mobile devices).
    - It is the way your professors can recognize you and, eventually, use for attendance purposes.
  - During zoom sessions, eventual recordings will be done.
    - Note that, following suggestions from college, they will not be available for downloads, unless any special / valid reason to be evaluated by professors can be considered (and even under these circumstances, without permission for sharing).
    - The basic idea is to promote the participation of students in remote sessions (preparing for upcoming face-to-face classes).

- About **marks / grades**:
  - Marks are supposed to be released in the Brightspace about 2 weeks after the submissions and exams.
  - Problems with marks should be reported as soon as possible (up to 2 weeks after the release of marks).
    - After this period, unless for exceptional reasons, it will not be possible to change.

***Final Note**: Considering the dynamic of the semester, eventual changes in CSI can exceptionally happen, but announcements will be done to formalize it.*

Finally, enjoy JAP and success in this course!

Java Application Programming professors – Fall 2021