Java Application Programming

Information and Communications Technology

Course Number:	Co-Requisites:	Pre-Requisites:
CST8221	N/A	CST8130
Applicable Program(s):	**AAL:**	**Core/Elective:**
0006X01FWO - Computer Eng. Technology - Comp. Science	4	Core
0006X03FWO - Computer Eng. Technology - Comp. Science	4	Core
Prepared by:	Svillen Ranev, Professor	
Approved by:	Andrew Pridham, Academic Chair, ICT	
Approval Date:	Wednesday, June 24, 2015	
Approved for Academic Year:	2015-2016	
Normative Hours:	75.00	

Course Description

Students learn advanced Java technology by developing multi-tiered applications featuring a rich graphical user interface (GUI). Students also learn how to build a GUI, object-oriented design patterns, networking, multi-threading and database connectivity and deployment.

Relationship to Vocational Learning Outcomes

This course contributes to your program by helping you achieve the following Vocational Learning Outcomes:

0006X01FWO - Computer Eng. Technology - Comp. Science

VLO 1	Diagnose, solve, troubleshoot, and document technical problems involving computing devices using appropriate methodologies. (T,A)
VLO 2	Integrate multiple software and hardware components using appropriate network architecture. (T,A)
VLO 6	Analyze, build, test, implement, and maintain applications. (T,A)

0006X03FWO - Computer Eng. Technology - Comp. Science

VLO 1	Diagnose, solve, troubleshoot, and document technical problems involving computing devices using appropriate methodologies. (T,A)
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VLO 6	Analyze, build, test, implement, and maintain applications. (T,A)

Relationship to Essential Employability Skills

This course contributes to your program by helping you achieve the following Essential Employability Skills:

EES 2	Respond to written, spoken or visual messages in a manner that ensures effective communication. (A)
EES 4	Apply a systematic approach to solve problems. (T,A)

EES 5	Use a variety of thinking skills to anticipate and solve problems. (A)
EES 6	Locate, select, organize and document information using appropriate technology and information systems. (A)
EES 7	Analyze, evaluate and apply relevant information from a variety of sources. (T,A)

Course Learning Requirements/Embedded Knowledge and Skills

When you have earned credit for this course, you will have demonstrated the ability to:

1.) Implement GUI applications using the Java Foundation Classes (Swing) and JavaFX.

Explain the basic human-computer interface (GUI in particular) design principles and process;

Make distinction between different types of Java programs: applets, applications, and servlets;

Design, develop, test, debug, deploy, and maintain JFC ("Swing" in particular) and JavaFX applications.

2.) Use various Object-Oriented (OO) design patterns.

Apply various OO design patterns, especially the Model-View-Controller (MVC) design pattern, in the implementation of Java GUI applications.

3.) Understand the Java concurrency (multithreading) implementation.

Demonstrate working knowledge of what Java threads are and how to manage concurrent programming activities by the means of priorities, scheduling, and synchronization;

Write multithreaded Java applications.

locate, select, and document information using various Internet resources.

4.) Understand the Java networking implementation with sockets and URL connections.

Write simple applications and applets that manipulate URLs;

Make use of Java's socket programming techniques to communicate between Java applications using TCP and UDP transport protocols.

locate, select, and document information using various Internet resources.

5.) Develop Java applications that access a database using JDBC

Write simple Java applications that manipulate a relational database (JavaDB and/or MySQL) using JDBC and multi-tier architecture.

locate, select, and document information using various Internet resources.

Learning Resources

Required: (used in pre-requisite courses CST8110, CST8132, CST8130)
Java How to Program, 9th ed., by H.M. Deitel and P.J. Deitel, Pearson Education Inc., ISBN-10: 0-13-257566-3

This course is part of the BYOD (laptop) program initiative at Algonquin College. Students are required to have a functioning laptop at all lecture and lab classes. The specifications for the required laptop and additional information about the mobile program initiative can be found at: http://www.algonquincollege.com/byod/

Recommended:
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

Software Required:

1)Java SE JDK – version 8u45 or later – free download from
http://www.oracle.com/technetwork/java/javase/downloads/index.html
2) Eclipse IDE for Java Developers – free download from http://www.eclipse.org/downloads/
3) NetBeans 8.0.2 or later IDE

Additional Resources:

Additional resources will be provided within the posted course materials.

Learning Activities

- classroom lectures and program demonstrations.
- online activities and program demonstrations.
- individual in-lab exercises and assignments.
- paired practical assignments.
- research of course-related material.

This course is delivered as a hybrid course. The course consists of 2 hours of classroom lecture and 2 hours of lab per week, as well as one hour per week online delivery of course material and associated activities. The online component of the course will be available through the college web based Blackboard course management system. Additionally, it is anticipated that you will need to spend 4 hours per week, on average, of your own time for assignments and study.

Lectures:

- In-class theoretical and practical course material will be presented using different visual aids.
- Approximately one hour per week outside your classroom lecture time will be required to review online materials and complete the related activities.
- Students are expected to attend all of the lectures and review all of the materials posted in web-based repositories.
- Students will be expected to find and read applicable material in the textbook, and to be prepared to answer oral or written questions during class lectures.
- Students are encouraged to ask questions during lectures and to consult with the professor on topics that they do not clearly understand.
- Students are also encouraged to ask/answer questions or initiate discussions using the Web based Discussion Board forums.
- The professors will inform students, at the beginning of the course, of suitable times for consultations.

Labs:

- Students will apply the lecture material to a series of in-lab exercises and assignments which are closely integrated with the lecture material.
- The students' ability to successfully complete the assigned exercises will directly correlate with their level of success on tests and the final exam.
- Labs and assignments build on earlier work, and are increasingly complex as the course progresses.
- Students should seek advice and help from the professors in the laboratory. Students who have been attending labs may still need extra help from the professor outside of the scheduled lab period. In such cases, students should visit the professor in his/her course dedicated office hours.
- Larger assignments, and hybrid exercises can be completed in the college or at home. Smaller lab exercises should be completed during the scheduled period, especially, if they have a credit-related component. All assignment and exercises must be authentic student work.
- The students may be allowed to work in pairs on large assignments. The pairs may be defined by the lab professor. The pairs may be rearranged for every assignment. Both members of a paired team must be present during demonstrations and other forms of contact type evaluation. And absent member may not receive a full

credit (or credit at all) for a particular assignment. The team members may receive a different credit depending on their level of contribution for a particular assignment.

Evaluation/Earning Credit

The following list provides evidence of this course's learning achievements and the outcomes they validate:

Midterm Exam(s) (30%)

Validates Outcomes: CLR 1, CLR 2, EES 2, EES 4, EES 5, EES 7

Final Exam (30%)

Validates Outcomes: CLR 1, CLR 2, CLR 3, CLR 4, CLR 5, EES 2, EES 4, EES 5

Assignment(s) (32%)

Validates Outcomes: CLR 1, CLR 2, CLR 3, CLR 4, CLR 5, EES 2, EES 4, EES 5, EES 6, EES 7

Hybrid Assignment(s) (4%)

Validates Outcomes: CLR 1, CLR 2, CLR 3, CLR 4, CLR 5, EES 2, EES 4, EES 5, EES 6, EES 7

Lab Activity(ies) (4%)

Validates Outcomes: CLR 1, CLR 2, CLR 3, CLR 4, CLR 5, EES 2, EES 4, EES 5

Prior Learning Assessment and Recognition

Students who wish to apply for prior learning assessment and recognition (PLAR) need to demonstrate competency at a post-secondary level in all of the course learning requirements outlined above. Evidence of learning achievement for PLAR candidates includes:

- Challenge Exam
- Project/Assignment

Grade Scheme

Final Grade	Mark Equivalent	Numeric Value	Final Grade	Mark Equivalent	Numeric Value
A+	90% - 100%	4.0	A	85% - 89%	3.8
A-	80% - 84%	3.6	B+	77% - 79%	3.3
B	73% - 76%	3.0	B-	70% - 72%	2.7
C+	67% - 69%	2.3	C	63% - 66%	2.0
C-	60% - 62%	1.7	D+	57% - 59%	1.4
D	53% - 56%	1.2	D-	50% - 52%	1.0
F	0% - 49%	0	FSP	0	0

Course Related Information

The following information is course-specific:

In order to pass this course, at least **50%** (i.e. **20/40**) must be achieved in the in-lab exercises, hybrid activities, and assignments. Additionally, at least **50%** (i.e.**30/60**) must be achieved in the combined grade for midterm exam and final exam in order for the exercise and assignment marks to be added into the final grade. (Students who have a failing grade on the combined test and the exam will receive a grade of '**F**').

Attendance at the beginning of each laboratory session is compulsory, and absence from three or more laboratory sessions without the prior consent of the professor will result in a final grade of "F". Students are responsible for keeping a record of the number of laboratory sessions they have missed. Professors will not inform students of an impending failure because of missed laboratory sessions

All assignments must be submitted to pass the course! Completed assignments will be collected in machine-readable form for analysis and assessment. Printed copies may also be required. Incomplete assignments will be accepted when they are due and will be eligible for appropriate partial marks. Late assignments will receive a grade of zero, but still must be submitted to obtain a course credit. Late marked labs exercises need not be submitted and will receive a grade of zero.

The Computer Studies Department requires that all course assignments be submitted by students using a standard, which could be specific to one or more courses. Professors will ensure, at the beginning of the term, that students are advised of the exact details of these course specific submission requirements. Professors will also post them online. Student submissions that do not meet the course published submission standards may not be marked, and may incur a penalty of up to 100% of the submission mark.

All students are required to write the final exam. There are no provisions for 'making up' a missed final exam. If, as a result of being off-track in your program or some unforeseen circumstance, you note that there is a scheduling conflict in your final exam schedule, it is your responsibility to alert your course professor no later than one week before final exams start, to allow for any special arrangements.

Department Related Information

STUDENT ACADEMIC RESPONSIBILITIES

Each student is responsible for:

• Knowing the due dates for marked out-of-class assignments.
• Attending all classes and knowing the dates of in-class marked assignments and exercises.
• Maintaining a folder of all work done in the course during the semester for validation claims in cases of disagreement with faculty.
• Keeping both paper and electronic copies of all assignments, marked and unmarked, in case papers are lost or go missing.
• Regularly checking both Blackboard announcements as well as one's Algonquin e-mail account for important messages from both professors and college administration.
• Participating in on-line and classroom exercises and activities as required.
• Retaining course outlines for possible future use to support applications for transfer of credit to other educational institutions.

Harassment/Discrimination/Violence will not be tolerated. Any form of harassment (sexual, racial, gender or disability-related), discrimination (direct or indirect), or violence, whether involving a professor and a student or amongst students, will not be tolerated on the college premises. Action taken will start with a formal warning and proceed to the full disciplinary actions as outlined in Algonquin College Policies - HR22 and SA07.

Harassment means one or a series of vexatious comment(s) (whether done verbally or through electronic means), or conduct related to one or more of the prohibited grounds that is known or ought reasonably to be known to be unwelcome/unwanted, offensive, intimidating, derogatory or hostile. This may include, but is not limited to: gestures, remarks, jokes, taunting, innuendo, display of offensive materials, offensive graffiti, threats, verbal or physical assault, stalking, slurs, shunning or exclusion related to the prohibited grounds.

For further information, a copy of the official policy statement can be obtained from the Student Association.

Violation of the Copyright Act

General – The Copyright Act makes it an offence to reproduce or distribute, in whatever format, any part of a publication without the prior written permission of the publisher. For complete details, see the Government of Canada website at http://laws.justice.gc.ca/en/C-42 . Make sure you give it due consideration, before deciding not to purchase a textbook or material required for your course.

Software Piracy - The Copyright Act has been updated to include software products. Be sure to carefully read the licensing agreement of any product you purchase or download, and understand the terms and conditions covering its use, installation and distribution (where applicable). Any infringement of licensing agreement makes you liable under the law.

Disruptive Behaviour is any conduct, or threatened conduct, that is disruptive to the learning process or that interferes with the well being of other members of the College community. It will not be tolerated. Members of the College community, both students and staff, have the right to learn and work in a secure and productive environment. The College will make every effort to protect that right. Incidents of disruptive behaviour must be reported in writing to the departmental Chair as quickly as possible. The Chair will hold a hearing to review available information and determine any sanctions that will be imposed. Disciplinary hearings can result in penalties ranging from a written warning to expulsion.

For further details, consult the Algonquin College Policies AA32, SA07 and IT01 in your Instaguide.

College Related Information

Email

Algonquin College provides all full-time students with an e-mail account. This is the address that will be used when the College, your professors, or your fellow students communicate important information about your program or course events. It is your responsibility to ensure that you know how to send and receive e-mail using your Algonquin account and to check it regularly.

Students with Disabilities

If you are a student with a disability, it is strongly recommended that you identify your needs to your professor and the Centre for Students with Disabilities (CSD) or Student Services, by the end of the first month of the semester in order that necessary accommodations or support services can be arranged for you.

Academic Integrity & Plagiarism

Adherence to acceptable standards of academic honesty is an important aspect of the learning process at Algonquin College. Academic work submitted by a student is evaluated on the assumption that the work presented by the student is his or her own, unless designated otherwise. For further details consult Algonquin College Policies AA18: Academic Dishonesty and Discipline and AA20: Plagiarism

Student Course Feedback

It is Algonquin College's policy to give students the opportunity share their course experience by completing a student course feedback survey for each course they take. For further details consult Algonquin College Policy AA25: Student Course Feedback

Use of Electronic Devices in Class

With the proliferation of small, personal electronic devices used for communications and data storage, Algonquin College believes there is a need to address their use during classes and examinations. During classes, the use of

such devices is disruptive and disrespectful to others. During examinations, the use of such devices may facilitate cheating. For further details consult Algonquin College Policy AA32: Use of Electronic Devices in Class

Transfer of Credit

It is the student's responsibility to retain course outlines for possible future use to support applications for transfer of credit to other educational institutions.

Note: It is the student's responsibility to refer to the Algonquin College Policies website for the most current information at http://www.algonquincollege.com/directives/

Legend

Terms

- ALO: Aboriginal Learning Outcome
- Apprenticeship LO: Apprenticeship Learning Outcome
- CLR: Course Learning Requirement
- DPLO: Degree Program Learning Outcome
- EES: Essential Employability Skill
- EOP: Element of Performance
- GELO: General Education Learning Outcome
- LO: Learning Outcome
- PC: Program Competency
- PLA: Prior Learning Assessment
- PLAR: Prior Learning Assessment and Recognition
- VLO: Vocational Learning Outcome

Assessment Levels

- T: Taught
- A: Assessed
- CP: Culminating Performance