Mobile Graphical Interface Programming

Information and Communications Technology

Course Number:	Co-Requisites:	Pre-Requisites:
CST2335	N/A	CST8215 and CST8284
Applicable Program(s):	**AAL:**	**Core/Elective:**
0006X01FWO - Computer Eng. Technology - Comp. Science	6	Elective
0006X03FWO - Computer Eng. Technology - Comp. Science	6	Elective
0336I01CKU - Computer Programmer	3	Core
0336X01FWO - Computer Programmer	3	Core
0336X03FWO - Computer Programmer	3	Core
Prepared by:	Eric Torunski, Professor	
Approved by:	Andrew Pridham, Academic Chair, ICT	
Approval Date:	Monday, August 20, 2018	
Approved for Academic Year:	2018-2019	
Normative Hours:	60.00	

Course Description

Students explore mobile Graphical Interface Programming Development of graphical user interfaces (GUI) in a mobile android environment. Students learn to construct mobile GUI applications using the latest Android tools and applying the latest Android best practices.

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 3	Participate in analyzing, planning, designing, and developing the architecture of computing

	devices and systems. (T, A,)
VLO 6	Analyze, build, test, implement, and maintain applications. (T, A,)
VLO 8	Articulate, defend, and conform to workplace expectations found in technology environments. (T, A,)
VLO 9	Contribute to the successful completion of the project applying the project management principles in use. (T, A,)
VLO 10	Identify and apply discipline-specific factors that enable their contribution to the local and global community through social responsibility, economic commitment and environmental stewardship. (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,)
VLO 2	Integrate multiple software and hardware components using appropriate network architecture. (T, A,)
VLO 3	Participate in analyzing, planning, designing, and developing the architecture of computing devices and systems. (T, A,)
VLO 6	Analyze, build, test, implement, and maintain applications. (T, A,)
VLO 8	Articulate, defend, and conform to workplace expectations found in technology environments. (T, A,)
VLO 9	Contribute to the successful completion of the project applying the project management principles in use. (T, A,)
VLO 10	Identify and apply discipline-specific practices that contribute to the local and global community through social responsibility, economic commitment and environmental stewardship. (T, A,)

0336I01CKU - Computer Programmer

VLO 1	Use documented solutions to troubleshoot problems associated with software installation and customization. (T, A,)
VLO 2	Develop, test, document, deploy, and maintain secure program code based on specifications. (T, A,)
VLO 3	Perform routine maintenance on a database. (A,)
VLO 6	Use relevant methodologies, policies, and standards to develop secure program code. (T, A,)
VLO 7	Maintain effective working relationships with clients. (A,)
VLO 8	Conform to workplace expectations found in information technology (IT) environments. (T, A,)
VLO 9	Contribute to the successful completion of the project applying the project management principles in use. (T, A,)
VLO 10	Identify and apply discipline-specific practices that contribute to the local and global community through social responsibility, economic commitment and environmental stewardship. (T, A,)

0336X01FWO - Computer Programmer

VLO 1	Use documented solutions to troubleshoot problems associated with software installation and

	customization. (T, A,)
VLO 2	Develop, test, document, deploy, and maintain secure program code based on specifications. (T, A,)
VLO 3	Perform routine maintenance on a database. (A,)
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VLO 7	Maintain effective working relationships with clients. (A,)
VLO 8	Conform to workplace expectations found in information technology (IT) environments. (T, A,)
VLO 9	Contribute to the successful completion of the project applying the project management principles in use. (T, A,)
VLO 10	Identify and apply discipline-specific practices that contribute to the local and global community through social responsibility, economic commitment and environmental stewardship. (T, A,)

0336X03FWO - Computer Programmer

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VLO 6	Use relevant methodologies, policies, and standards to develop secure program code. (T, A,)
VLO 7	Maintain effective working relationships with clients. (A,)
VLO 8	Conform to workplace expectations found in information technology (IT) environments. (T, A,)
VLO 9	Contribute to the successful completion of the project applying the project management principles in use. (T, A,)
VLO 10	Identify and apply discipline-specific practices that contribute to the local and global community through social responsibility, economic commitment and environmental stewardship. (T, A,)

Relationship to Essential Employability Skills

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

EES 1	Communicate clearly, concisely and correctly in the written, spoken and visual form that fulfills the purpose and meets the needs of the audience. (T, A,)
EES 2	Respond to written, spoken or visual messages in a manner that ensures effective communication. (A,)
EES 3	Execute mathematical operations accurately. (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. (T, 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,)
EES 9	Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals. (T, A,)
EES 10	Manage the use of time and other resources to complete projects. (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.) Write a graphical user interface based program, given design documents. Techniques used will be object-oriented programming, structured programming, top-down coding, and event-driven coding.

Use good graphical interface design principles to build a user interface for an Android application.

Use various graphical programming components to build user interfaces using the Android SDK.

Declare layout of UI elements in well-formed XML

Code event procedures in a GUI based program.

Write programs that utilize the Memento Design Pattern (https://sourcemaking.com/design_patterns/memento)

2.) Produce tested code that executes correctly and consistently. Testing procedure will involve the use of: iterative testing of GUI program components, valid data only, invalid data only, a combination of valid and invalid data and setwise refinement involving users.

Analyze requirements

Decompose complex problems

Apply principles to build consistent and usable graphical user interfaces

Design and code loosely coupled, highly cohesive software modules

Design and implement practical quality assurance

3.) Prepare program documentation using prescribed program specifications

Implement technical documentation, including module and member level documentation using Javadoc documentation comments

4.) Debug program problems using manual and programmatic methods

Use debugging features of an IDE

5.) Modify an existing program according to program specifications.

Decipher and maintain existing programs

6.) Access and modify a database table from within the graphical user interface. Create a layered application (Presentation, Business, and Data access layers). Use a Data Access layer to provide data access to an application.

Implement data controls, layered architecture, and database management in a graphical programming environment.

Implement an SQLite database in the Android envoironment to store the data associated with an application.

7.) Create GUI programs that support internationalization as well as sustainability.

Create a GUI program that supports internationalization (multilingual support).

Create a program that demonstrates programming as means to create tools to support sustainability.

8.) Collaborate with fellow students in a team to complete complex assignments

Recognize common problems

Establish module interfaces that allow work to be distributed amongst team members

Accept responsibility for designing and implementing code modules within a design framework such that group success is ensured

Communicate with others in a timely and supportive fashion

Set and observe realistic time schedules that include allowances for final integration and testing

Learning Resources

Required Hardware:

This course is part of the mobile (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.

Required Software:

1) Android Studio (free download)

2) Android SDK tools (free download)

Required Textbook:

1) Beginning Android Programming with Android Studio, John Wiley and Sons, ISBN-13: 9781118705599

Learning Activities

During this course, you are likely to experience the following learning activities:

Lectures - 2 hrs / week

Lab - 2 hrs / week

Lab Prep and homework - at least 5 hours / week

Samples of learning activities include:

- Development of Android programs
- Integration of code classes with GUI components
- Assignments using a DBMS
- Individual coding assignments.
- Team work to solve coding assignments

Evaluation/Earning Credit

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

Assignment(s) (45%)

Validates Outcomes: CLR 1, CLR 2, CLR 3, CLR 4, CLR 5, CLR 6, CLR 7, CLR 8, EES 1, EES 2, EES 3, EES 4, EES 5, EES 6, EES 7, EES 9, EES 10

Midterm Exam(s) (20%)

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

Quiz(zes)/Test(s) (5%)

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

Final Exam (30%)

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

Students are expected to meet evaluation and completion deadlines as stated in course outline and course section information documents. In circumstances where evaluation and/or completion deadlines are missed or student performance has been affected by a temporary or permanent disability (including mental health), interim or retroactive accommodations may be considered. In such instances, please consult your course faculty member. For other situations where deferral of evaluations may be warranted, please refer to college policy AA21.

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:

- Portfolio
- 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:
The mid-term and final exams will consist of theoretical in-class components discussed during in-class lectures and applied during practical in-lab sessions. Note: The tests will be paper based and you will be expected to be able to write Java code by hand to solve problems. This includes, but is not restricted to, determining errors and/or add missing elements in provided code, writing classes and class members.

In order to pass the course, the student must have a grade of at least 50% or “D-” on tests and final exam combined, as well as on the lab exercises component.
Lab assignments will not be included in the final grade unless the student achieves at least a grade of 50% or “D-” of the available marks on the combined test and final exam, and must have a passing grade of at least 50% or “D-” on the projects and assignments combined.
(Students who have a failing grade on either the combined project/assignments mark or the combined midterm/final exam will receive a grade of “F”.)

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, you are strongly encouraged to make an appointment at the Centre for Accessible Learning to identify your needs. Ideally, this should be done within the first month of your program, so that a Letter of Accommodation (LOA) can be provided to your professors. If you are a returning student, please ensure that professors are given a copy of your LOA each semester.

Retroactive Accommodations

Students are expected to meet evaluation and completion deadlines as stated in course outline and course section information documents. In circumstances where evaluation and/or completion deadlines are missed or student performance has been affected by a temporary or permanent disability (including mental health), interim or retroactive accommodations may be considered. In such instances, please consult your course faculty member. For other situations where deferral of evaluations may be warranted, please refer to college policy AA21.

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 to 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/policies/*

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