LaSalle College
Montréal

COURSE OUTLINE

Course Identification

Name of program – Code:	MOBILE AND WEB APPLICATIONS DEVELOPMENT FOR THE MOBILE DEVICES (LEA.00)
COURSE TITLE:	**ADVANCED MOBILE APPLICATIONS DEVELOPMENT FOR ANDROID**
Course number:	420-NA6-AS
Total number of course hours:	90 Hours
Weighting:	2-4-3
Statement of the competencies– Codes:	Ensure the quality of an application-0177 Design and develop an application in a graphics environment.- 017C

Contribution of the Course in the Program

Course position

Advanced Mobile applications development for Android (420-NA6-AS) is offered in the third semester of the *Mobile and Web Applications development for the mobile devices* program (LEA.00). It is a 90 hours course divided into 30 hours of theory and 60 hours of computer lab. In addition, students enrolled in this course are encouraged to complete at least 45 hours of self-study. The course *introduction to mobile development for android* (420-ND5-AS) is prerequisites of this course, which is itself a prerequisite for the course *Final Project* (420-PS6-AS).

The competency 0177 is shared with the courses *Project Management* (420-GP6-AS) and *Advanced Mobile applications development for iOS (*420-MD6-AS) This latter finalizes this competency. Concerning the competency 017C is shared with the courses *Introduction to Mobile development for iOS* (420-AT5-AS), Advanced Mobile applications development for iOS (420-MD6-AS), and *Final Project* (420-PS6-AS). This latter finalizes this competency. Learning activities acquired in this course will be reinvested in the *Final Project* (420-PS6-AS)

Scope of the course

During this course, the topics covered provide students with advanced aspects of android programming. At first, student build programmatically user interface using java, examines permission, and manipulates several types of data storage. Then he manages concurrency and manipulates sensors. Student learns also how to employ android API, to build a mobile web application and to access and exploit a web service.

Upon completion of this course, the student will be able to develop mobile application under android device. He will be able to manage different types of data, to use appropriate permission and implement concurrency. He will also be able to build mobile application using android API such as camera, phone and agenda. In addition, he will be able to build and manage mobile web application and web services.

Course Components (Objective and Standard of the Competencies)

Expected outcomes (achievement context of the competencies

The achievement context of these competencies will reflect the conditions as they occur in the following settings: academic, professional, work, or life environment.

Achievement context specific to competency Ensure the quality of an application-0177

- Using a workstation and the appropriate testing software.
- Using applications representative of those found in the workplace.
- Using applications that employ object-oriented and structured programming techniques.
- Based on unit test results.
- Based on company requirements and data processing standards.
- Based on documentation on each application.
- Using appropriate technical reference manuals.

Achievement context specific to competency Design and develop an application in a graphics environment.- 017C

- Based on the general concept of developing an application using the development tools of the operating system available to the programmers.
- Using a workstation and the appropriate software.
- In various graphics environments.
- Based on the standards of the various graphic environments.
- Based on data processing standards.
- Using appropriate technical reference manuals.
- In co-operation with project participants.

Throughout the course, you will engage in various learning situations/activities so that by the end of the course, you will have met the expected outcomes.

Elements and performance criteria

The elements of an objective formulated in terms of the competency specify its essential components. They include only what is necessary in order to understand and master the competency. If the competency is described as a process, the elements are the steps for execution.

The performance criteria are the specific pre-established requirements upon which you and your teacher can objectively judge your development of the targeted competency. They are part of the description of this competency. They are prescriptive.

Sometimes an element appears in more than one course. If this is the case, a number indicates its complexity level: level one (1) being the simplest, level two (2), average, and level three (3), advanced, at the ministerial level.

Below are the elements of the competencies and performance criteria for this course that are to be respected:

Competency: Ensure the quality of an application-0177

General ministerial and institutional performance criteria:

−   Autonomy

Elements of the competency	Performance criteria specific to each element
1. Plan tests.	1.1 Complete analysis of the application's features. 1.2 Complete analysis of the unit test results. 1.3 Establishment of the relationship between the expected quality of the application and the potential demonstrated in the various tests. 1.4 Proposal of an appropriate test sequence. 1.5 Exploration of the possibility of using a test library. 1.6 Appropriate test planning.
2. Run the various tests.	2.1 Creation of appropriate tests for the application. 2.2 Effective use of the test software. 2.3 Correct programming of tests. 2.4 Strict application of integration, integrity and performance testing techniques. 2.5 Proper use of test libraries. 2.6 Perseverance in conducting the tests. 2.7 Adherence to the testing schedule.
3. Verify the quality of the application.	3.1 Interpretation of results in accordance with established quality requirements. 3.2 Recording of all data on the tests and test results. 3.3 Evaluation of the need to redo certain tests and to adapt the testing procedures.

Competency:	Design and develop an application in a graphics environment.- 017C

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General ministerial and institutional performance criteria:

- Efficient programming
- Creativity

Elements of the competency	Performance criteria specific to each element
3. Model the application.	3.1 Appropriate application of a method of analysis. 3.2 Production of proper models in keeping with the chosen method of analysis. 3.3 Production of appropriate technical documents.
4. Program the application.	4.1 Appropriate use of libraries. 4.2 Appropriate programming of model elements. 4.3 Appropriate use of tools to create the elements of the interface. 4.4 Careful verification of application performance. 4.5 Documentation of the programs and archiving of the information
5. Produce documentation for the application.	5.1 Appropriate modification of all data on the application. 5.2 Appropriate creation of an on-line help function. 5.3 Production of a clear and comprehensive application user manual.

Course Content/Main Themes

*Listed below is the **essential** content to be covered in this course:*

BUILDING USER INTERFACE USING JAVA
- Creating and using fragments programmatically
- Creating and using Swipe tab

MANAGING DATA
- **SharedPreferences, cache, internal and external storage**
- **Using related permissions**
- **Sqlite databases**

MANAGING CONCURRENCY
- Threads, AsynchTask and handlers

MANAGING SENSORS
- Manipulating sensors

ANDROID INTERNAL SERVICE
- Building the apps : agenda, camera, phone, audio, video

WEB APPLICATIONS AND WEB SERVICES
- Building native apps using web services
- Building the native apps : Location and maps, whether
- Building web apps

Learning Activities

Provided below are examples of learning activities that correspond to the competencies for this course. The learning activities are found in the course calendar that complements this course outline.

– Group discussions

– Application exercises following demonstrations from teacher

– Case studies

– Situation problem

Terms for Evaluating Learning

The evaluation of your learning is based on two inseparable methods: formative evaluation and summative evaluation. These two evaluation types are formal. Detailed information on the evaluation schedule is found in the course calendar, under the "Formative and summative evaluation schedule" column.

Formative evaluation

Following a learning activity or learning period, time is set aside for introspection. You will determine what has been understood and achieved and seek to identify the nature and origin of weak areas. These designated periods consist of simple means: short tests, association games, logbooks, a portfolio, questions, creating of samples, etc.

*Formative evaluation is frequent and covers as many aspects as possible. It takes place in class, individually or in groups, and leads to immediate decisions. **You are the one who assumes the bulk of the work during individual or group corrections, adjustments and other self-evaluation tasks. The purpose is not to determine grades.***

If you take the formative evaluations seriously throughout the course, you will ensure preparedness for the summative evaluations. You will be able to make the necessary progress to acquire the targeted competency at the required level, according to the achievement context and pre-established performance criteria.

Below are some examples of formative evaluation methods that correspond to the targeted competencies for this course:

– Case studies

– Situation problem on managing data and using webservice

– Feedback from the teacher after students application exercises

Summative evaluation

Summative evaluations are less frequent. They take place later on, towards the middle and end of the semester. This gives you the time to integrate your learning and to learn how to apply it to situations related to the targeted competency. The summative evaluation material is prepared by your teacher according to the description of the course's targeted competency: its elements, achievement context and performance criteria.

The work completed in summative evaluations is graded. The purpose is to determine what you have learned.

Below is the information on the summative evaluation schedule and details for this course, as well as the weighting of marks:

Evaluations	*Weighting*
Mid-term exam	30%
Project	30%
Final exam	40%
Total	100%

Institutional Requirements

Student's commitment

By registering for this course, you commit to:

– *obtain the necessary course materials at the start of the semester;*
– *participate in the learning activities, formative and summative evaluation activities outlined in the course calendar;*
– *complete the work assigned to you and;*
– *submit the work on time.*

Teacher's commitment

Your teacher commits to:

– *create varied learning situations that enable you to put into practice the knowledge, actions and professional behaviour of the targeted competency;*
– *plan sufficient and appropriate formative evaluation activities, involving correction and improvement, that provide frequent feedback, allowing you to be well informed of your progress;*
– *provide summative evaluations that correspond to the course's targeted competency and;*
– *evaluate work according to the applicable criteria, in a fair and equitable manner.*

The Institutional Policy on Evaluating Learning (IPEL) is applied to all institutional programs. Listed below are a few of its clauses:

Written language

The teacher is responsible for identifying spelling and grammar errors and for deducting the corresponding number of marks for any given summative evaluation.

Below is the % – based on language requirements – that can be deducted from the grade of each summative evaluation:

− Penalty of up to 10%.

Class attendance

Attendance and participation in classes and evaluations are mandatory for all students.

The teacher has the responsibility of monitoring attendance and of evaluating the reasons justifying student absences from classes.

A student whose absences exceed the allowable number for the course could be denied access to the final exam for that course.

Plagiarism and cheating

Plagiarism, attempts at plagiarism or complicity in plagiarism, whether in an exam or an assignment to be evaluated, constitutes an infraction. Plagiarism and cheating include:

− *using part or all of someone else's work and passing it off as one's own, without indicating the appropriate reference;*
− *having or using unauthorized documents, material or equipment during an exam;*
− *using the exam of another student during an exam;*
− *having another student do one's work for an evaluation;*
− *substituting a different person to write an exam or assignment to be evaluated and;*
− *using an evaluation already completed for another course.*

Plagiarism, attempts at plagiarism or fraud, or collaboration in plagiarism or fraud are prohibited and considered serious offences. Thus, any instances of plagiarism or fraud will lead to a grade of '0' for the assignment in question. In addition, a note will be made in the student's file and the student will receive a written notice from his or her Program Directorate to that effect.

In the case of recidivism, in the same course or in another course, the student will be given a grade of '0' for the course in question. A second note is made in the student's file and the student will receive a summons from his or her Program Directorate. For a third offence, he or she may be expelled from the College.

Submission of work and tests

All assignments must be submitted in class at the time designated by the teacher. Any late submissions result in a grade of zero (0).

Upon presentation of an official supporting document or valid reason for the absence, the student may request an extension from the teacher, who may accept or refuse the student's work and apply a penalty for the lateness.

Program Directorates do not accept student work. Assignments must be submitted directly to the teacher.

Rules and regulations to follow

Late arrivals

The teacher may refuse to admit to the classroom any student arriving late. A late arrival is considered an absence for that period.

Note: Students arriving late must recognize that the information they missed will not be repeated. Late students are therefore responsible for asking their peers about the material they missed. Arriving after the break, as well as leaving before the end of the class, may result in one or more hours of absence.

Eating and drinking in class

Eating and drinking are prohibited in the classrooms, locker rooms and Documentation Centre. Food may only be eaten in the cafeteria, vending machine areas and student lounges.

Mandatory Course Material

– Backup media (usb flash disk)

– Student notebook for taking notes

– Android smartphone or Tablet

Bibliography for this Course

Android web site http://developer.android.com

Bill Phillip and Brian Hardy**,** Android Programming: The Big Nerd Ranch Guide 1ste Edition, Big Nerd Ranch , September 2013

Academic Studies Directorate Approval: *Signature and date of approval*