DEVELOPMENT & IMPLEMENTATION OF MOBILE APPS

BACHELOR IN MANAGEMENT INFORMATION SYSTEMS

Professor: MARÍA BORBONÉS GARCÍA
E-mail: mborbones@faculty.ie.edu

Academic year: 18-19
Degree course: THIRD
Semester: 2º
Category: COMPULSORY
Number of credits: 6.0
Language: English

PREREQUISITES
Working knowledge of Java, Javascript, HTML and CSS Programming.

SUBJECT DESCRIPTION
This course is designed for the third-year information and system management students. It encompasses three topics: Prototyping, developing mobile applications and integrating them to backend services. Before developing a mobile application is important to build a prototype based on the functional requirements. Once the design is clear, the students will learn all the concepts related to developing a mobile app and they will develop their first mobile application.

In addition, they will learn how to connect mobile applications to the real world through mobile device peripherical, to enterprise backend systems and to cloud services.

OBJECTIVES AND SKILLS
The main objective of this course is to demonstrate the value of choosing a right mobile strategy for an enterprise and help students to get started in the development of mobile applications.

At the end of the course, students should be able to:
- Understand the value of an effective enterprise mobile strategy
- Understand the value of building prototypes
- Learn types of mobile applications;
- Be able to choose the best mobile app development approach;
- Choose best tools for developing mobile applications
- Develop a starter android native application
- Develop a starter hybrid application
- Connecting mobile applications to the enterprise backend systems.
- Make use of mobile device peripherical.
- Understand the value of how to apply Artificial Intelligence and cloud services in mobile applications;

METHODOLOGY

Two types of lectures are delivered throughout this course: Theoretical and practical. During theoretical lessons students the basics for developing mobile applications and how to set a right enterprise mobile strategy. During the practical sessions; students will develop pieces of code to learn how to take advantage of mobile devices peripheral, such as, file storage or the camera and how to integrate a mobile application with the enterprise systems.

On weekly basis, a brief quiz covering previously taught material will be given. These quizzes are meant to test the students overall understanding of the material and will help the professor assess the overall performance and evolution of the class. Marks obtained on these quizzes will be included in the final grade. Quizzes will be done online via Campus Online. Instructions will be given a-priori.

Technology and Us!!!

In this course, it is all about technology. For this reason, whenever possible, technological tools will be used. Areas of applications include:

I. Quizzes, which will be done online via Campus Online, during the class lecture hours.
II. Kahoot (https://getkahoot.com/); a free online learning platform that will be used in the revision sessions, as one type of "flipping the classroom "teaching methodology.

Bringing your laptop is mandatory to all sessions, although its use (or not) will be decided by the professor

<table>
<thead>
<tr>
<th>Teaching methodology</th>
<th>Weighting</th>
<th>Estimated time a student should dedicate to prepare for and participate in</th>
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<tbody>
<tr>
<td>Lectures</td>
<td>20.0 %</td>
<td>30 hours</td>
</tr>
<tr>
<td>Discussions</td>
<td>0.0 %</td>
<td>0 hours</td>
</tr>
<tr>
<td>Exercises</td>
<td>30.0 %</td>
<td>45 hours</td>
</tr>
<tr>
<td>Group work</td>
<td>30.0 %</td>
<td>45 hours</td>
</tr>
<tr>
<td>Other individual studying</td>
<td>20.0 %</td>
<td>30 hours</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100.0 %</td>
<td>150 hours</td>
</tr>
</tbody>
</table>
The course consists of five parts and each part is divided into several units. The first part covers an overview of mobile applications and their importance in business field. In the second part, how to prototype and design mobile applications. This encompasses design principles, paper prototyping and web-based prototyping tools. The third part is focused on developing their first mobile application. The last two parts shows them the value of connecting a mobile app to the real world, through backend and cloud services.

Note: The following description of the material covered is tentative. An attempt will be made to cover all listed topics. However; the pace in the classes will depend on the group performance.

**SECTIONS 1 - 2 (FACE TO FACE)**

**Topics:** Introduction and presentation of the course syllabus and objectives. Mobile Applications Development Overview

**SECTIONS 3 - 4 (FACE TO FACE)**

**Topics:** Best practices. Creating a paper prototype based on functional requirements.

**Topics:** Evolving the prototype using existing web-based prototyping tools.

**SECTIONS 5 - 6 (FACE TO FACE)**

**Topics:** Hybrid apps development, tools, development frameworks (Ionic, Cordova)

**SECTIONS 7 - 8 (FACE TO FACE)**

**Topics:** Android native apps development, tools.

**SECTIONS 9 - 10 (FACE TO FACE)**

**Topics:** Developing the hybrid application user interface. Debugging

**SECTIONS 11 - 12 (FACE TO FACE)**

**Topics:** Developing the android native application user interface. Debugging

**SECTIONS 13 - 14 (FACE TO FACE)**

**Topics:** HTTP Requests. APIs. JSON Responses. Connecting to backend systems.

**SECTIONS 15 - 16 (FACE TO FACE)**

**Topics:** Offline Storage. How to store and access information when there is no connectivity.

**SECTIONS 17 - 18 (FACE TO FACE)**
**Topics:** Using mobile device peripherical. Taking a picture from a mobile application.

**SESSIONS 19 - 20 (FACE TO FACE)**

**Topics:** How to track mobile application’s user location. Geofencing and personalized location-based content.

**SESSIONS 21 - 22 (FACE TO FACE)**

**Topics:** How to send custom notifications to users. Push notifications

**SESSIONS 23 - 24 (FACE TO FACE)**

**Topics:** MQTT to connect and send messages between applications and other devices (Internet of Things)

**SESSIONS 25 - 26**

**Topics:** Artificial intelligence in mobile applications. Chatbots, visual recognition and natural language processing.

**SESSIONS 27 - 28**

FINAL PROJECT

**SESSIONS 29 - 30 (FACE TO FACE)**

PROJECT PRESENTATION

FINAL EXAM
EVALUATION CRITERIA

A. Class participation and discussion

Class participation will be evaluated based on the following criteria:

- Quality (not quantity) of your participation in class discussion: The most important dimension of participation concerns what it is that you are saying. A high quality comment reveals depth of insight, rigorous use of case evidence, consistency of argument, and realism. Frequency refers to the attainment of a threshold quantity of contributions that is sufficient for making a reliable assessment of comment quality. The logic is simple: if contributions are too few, one cannot reliably assess the quality of your remarks. However, once threshold quantity has been achieved, simply increasing the number of times you talk does not automatically improve your evaluation. Beyond the threshold, it is the quality of your comments that must improve. In particular, one must be especially careful that in claiming more than a fair share of “airtime”, quality is not sacrificed for quantity. Finally, your attempts at participation should not be such that the instructor has to “go looking for you”. You should be attempting to get into the debate on a regular basis.

You might want to avoid being classified as one of the following types of students:

- Repeaters, i.e., students that, consciously or unconsciously, make comments that are really just repeats/rephrasing of what has already been said (by other students, or you). This wastes time and adds nothing to learning.
- Ramblers, i.e., students that take a lot of time to say simple things or they may tell long personal/professional stories, or they roam into topics that are not relevant, or simply make low-quality comments just to participate. They waste valuable time and prevent other students from being able to participate.
- Students that have been distracted (by Facebook, etc.) or who have stopped paying attention and then, later on, when they realized they have missed a term or concept, they ask you about it.

B. Final Project and presentation
Last sessions will be dedicated to build a final project in groups. The output will be a deliverable containing the resulting mobile application based on the course content.

Students will be provided with detailed instructions to build a mobile app based on the course content. Each group will present the result in class using a presentation and they will be evaluated.

C. Quizzes
At the beginning of some sessions, you will be given a short online-quiz based on previously covered material. These quizzes will help you assess your overall understanding of the subject being studied and identify any caveat in your learning. NO MAKE UP FOR QUIZZES IS ALLOWED.

D. Final exam
There will be one final exam. In order to pass the course, you need a minimum grade of 5 in the final exam. If your grade in the final exam does not reach the threshold value of 5, you will fail the course, even in the case in which your weighted average (computed using the table above) exceeds 5.0.

RETAKE POLICY
- Each student has 4 chances to pass any given course distributed in two consecutive academic years (regular period and July period).
- Students who do not comply with the 70% attendance rule will lose their 1st and 2nd chance, and go directly to the 3rd one (they will need to enrol again in this course next academic year).

Grading for retakes will be subject to the following rules:
- Students failing the course in the first regular period will have to do a retake in July (except those not complying with the attendance rules, which are banned from this possibility).
- Dates and location of the July retakes will be posted in advance and will not be changed. Please take this into consideration when planning your summer.

The July retakes will consist of a comprehensive exam. The grade will depend only on the performance in this exam; continuous evaluation over the semester will not be taken into account. This exam will be designed bearing in mind that the passing grade is 5 and the maximum grade that can be attained is 8.

The non-July retakes (this happens in the ordinary period: students in their third attempt) will entail a midterm and a final exam. The weights are as follows: midterm 40%, final 60%. In order to pass, a minimum of 3.5 in the final exam is required.

The maximum grade that a student may obtain in any type of retake will be 8 out of 10.

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<thead>
<tr>
<th>Criteria</th>
<th>Percentage</th>
<th>Comments</th>
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<tbody>
<tr>
<td>Class Participation</td>
<td>10 %</td>
<td></td>
</tr>
<tr>
<td>Final Project and Presentation</td>
<td>30 %</td>
<td></td>
</tr>
<tr>
<td>Quizzes</td>
<td>10 %</td>
<td></td>
</tr>
<tr>
<td>Practical Exercises</td>
<td>20 %</td>
<td></td>
</tr>
<tr>
<td>Final Exam</td>
<td>30 %</td>
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PROFESSOR BIO
Professor: MARÍA BORBONÉS GARCÍA
E-mail: mborbones@faculty.ie.edu

MARÍA BORBONÉS GARCÍA

08th November 2018
**Academic Background**
MS, Artificial Intelligence, Universidad Politécnica de Madrid, Spain, 2012  
BE, Commercial Computing, Dundalk Institute of Technology, Ireland 2011  
BE, Computer Engineering, Universidad Cardenal Herrera CEU, 2011

**Academic Experience**
2019 – Present: Associate Professor, IE, Madrid, Spain.  
2017 – Present: Associate Professor, MSMK, Madrid, Spain.  
2018 – Present: Associate Professor; ICEMD, Madrid, Spain.

**Experience**
2011 – 2012, WebSphere IT Specialist (internship), IBM, Spain, Portugal, Greece and Israel.  
2012 – 2014, WebSphere IT Specialist, IBM, Spain, Portugal, Greece and Israel.  
2015 – Present, IBM Watson Cloud and Data Platform IT Specialist, IBM, Spain, Portugal, Greece and Israel.

**OTHER INFORMATION**
**OFFICE HOURS; CONTACT INFORMATION**
- Office hours: After-class (upon appointment)  
- Contact details: mborbones@faculty.ie.edu

**CODE OF CONDUCT IN CLASS**

1. **Be on time:** Students arriving more than 5 minutes late will be marked as “Absent”. Only students that notify in advance in writing that they will be late for a specific session may be granted an exception (at the discretion of the professor).  
2. **If applicable, bring your name card and strictly follow the seating chart.** It helps faculty members and fellow students learn your names.  
3. **Do not leave the room during the lecture:** Students are not allowed to leave the room during lectures. If a student leaves the room during lectures, he/she will not be allowed to re-enter and, therefore, will be marked as “Absent”. Only students that notify that they have a special reason to leave the session early will be granted an exception (at the discretion of the professor).  
4. **Do not engage in side conversation.** As a sign of respect toward the person presenting the lecture (the teacher as well as fellow students), side conversations are not allowed. If you have a question, raise your hand and ask it. If you do not want to ask it during the lecture, feel free to approach your teacher after class. If a student is disrupting the flow of the lecture, he/she will be asked to leave the classroom and, consequently, will be marked as “Absent”.  
5. **Use your laptop for course-related purposes only.** The use of laptops during lectures must be authorized by the professor. The use of Social Media or accessing any type of content not related to the lecture is penalized. The student will be asked to leave the room and, consequently, will be marked as “Absent”.  
6. **No cellular phones:** IE University implements a “Phone-free Classroom” policy and, therefore, the use of phones, tablets, etc. is forbidden inside the classroom. Failing to abide by this rule entails expulsion from the room and will be counted as one absence.

08th November 2018
7. **Escalation policy: 1/3/5.** Items 4, 5, and 6 above entail expulsion from the classroom and the consequent marking of the student as “Absent.” IE University implements an ‘escalation policy’: The first time a student is asked to leave the room for disciplinary reasons (as per items 4, 5, and 6 above), the student will incur one absence, the second time it will count as three absences, and from the third time onward, any expulsion from the classroom due to disciplinary issues will entail 5 absences.