804247 - DMOB - Mobile Devices

Degree competences to which the subject contributes

Generical:
CGFC4VJ. (ENG) Aplicar los procedimientos algorítmicos básicos de las tecnologías informáticas para diseñar soluciones a problemas, analizando la idoneidad y complejidad de los algoritmos propuestos.

CGFC5VJ. (ENG) Diseñar y utilizar de forma eficiente los tipos y estructuras de datos más adecuados a la resolución de un problema relacionado con el desarrollo de videojuegos.

Transversal:

Learning objectives of the subject

Learn the skills to use the necessary tools for the programming of native applications with Android.

Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group:</th>
<th>18h</th>
<th>12.00%</th>
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<tbody>
<tr>
<td>Hours medium group:</td>
<td>30h</td>
<td>20.00%</td>
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<tr>
<td>Hours small group:</td>
<td>0h</td>
<td>0.00%</td>
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<tr>
<td>Guided activities:</td>
<td>12h</td>
<td>8.00%</td>
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<tr>
<td>Self study:</td>
<td>90h</td>
<td>60.00%</td>
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</table>
## Content

| 1. Introduction to Android | Learning time: 20h  
Practical classes: 8h  
Self study: 12h |
<table>
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<tr>
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<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Fundamentals of the Android programming. Application components. Application resources.</td>
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</tbody>
</table>
| 2. User interface         | Learning time: 40h  
Practical classes: 16h  
Self study: 24h |
| **Description:**          | Views, ViewGroups and Layouts. AdapterView and Adapters. Flow of screens: Activities. |
| 3. Multi-thread programming and of the communications | Learning time: 40h  
Practical classes: 16h  
Self study: 24h |
| **Description:**          | Threads, AsyncTask and TimerTasks. HttpURLConnection and JSON. RESTful Web Services. WebSockets. |
| 5. Push service           | Learning time: 30h  
Practical classes: 12h  
Self study: 18h |
| **Description:**          | Broadcast Receivers. Services. Push Service. |
| 5. Localization and multimedia | Learning time: 20h  
Theory classes: 8h  
Self study: 12h |
| **Description:**          | Programming with the geographical localization library. Programming of multimedia services: photo, audio and video. |
### Planning of activities

#### Programming exercise of the user interface. Mock-up of a chat service.
**Hours:** 10h  
Practical classes: 10h

**Description:**  
This programming exercise is devoted to familiarize the student with the available tools for the design of the screens of any mobile application, that is to say, the programming of the user interface, programming of the screens and the algorithms for the processing of the events produced by the user of the app. Mock-up of a chat service, programming of an echo service to test the mock-up.

#### Programming exercise implementing the chat service with polling strategy. Access to the server’s content
**Hours:** 14h  
Practical classes: 14h

**Description:**  
For this programming exercise the student will have to make a complete implementation of a chat service using the polling strategy, that is to say, periodically requesting new content from the server. The student will study the use of the RESTful web service technology to access to the content from a web server, the programming of a periodic access with a Timer and the setup of a web server with access to a database to register all the conversations among the users.

#### Programming exercise of the chat service by a push functionality.
**Hours:** 6h  
Practical classes: 6h

**Description:**  
As our third section on the development of a prototype of a chat application we will substitute the polling strategy by a push functionality to retrieve new content from the server in an asynchronous manner, that means that we will have to reprogram the client and server using this new push service.

#### Programming exercises during the lectures
**Hours:** 10h  
Practical classes: 10h

**Description:**  
Along the course, during the theoretical lectures, we will devote on each session 40 minutes of our time to complete short programming exercises related to the theoretical concepts learned during the same session. Usually, we will complete a couple of programming exercises, each one to be done in 20 minutes.
Qualification system

Mid-term exam: 25%
Submission of 3 programming exercises: 40% (15% +15% +10%)
Student participation and attitude: 10%
Final exam: 25%

There is the option to take an extra exam if you have failed the subject, if that is the case you will be reassessed of the contents learned by the lectures, that is to say, the 20% of the continuous assessment + 25% of the final exam, it is exclude from the reassessment the 40% grade you obtained from the submission of programming exercises.

Bibliography

Basic: