# NOVA Information Management School

## NOVA IMS

<table>
<thead>
<tr>
<th>Course</th>
<th>Location Based Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinator:</td>
<td>Pedro Cabral</td>
</tr>
<tr>
<td>ECTS</td>
<td>4</td>
</tr>
<tr>
<td>Carga horária</td>
<td>45</td>
</tr>
</tbody>
</table>

### Objectives:

This course has a practical and theoretical component. The practical component, which corresponds to the 1st half of the course, aims to provide the basic capabilities to develop applications with ArcGIS Runtime SDK for .NET.

The theoretical component, which corresponds to the second half of the course, aims to explore the technical concepts related with LBS.

In the end of the course, students should be able to:

- Develop a basic application with maps in .NET
- Discuss critically the main concepts related with LBS.

### Curricular Unit

**Contents:**

The practical component comprises 5 tutorials:

1. Add a map to your app
2. Use ArcGIS basemaps
3. Access feature data in the cloud
4. Work with portal content
5. Add geocoding to your app
6. Get driving directions

The theoretical component has the following content:

1. Positioning Technologies in Location-Based Services
2. Wireless Location Technology in Location-Based Services
3. Location in Wireless Local Area Networks
4. Radio Frequency Identification Positioning
5. Supporting Smart Mobile Navigation in a Smart Environment
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Indoor Location Determination: Environmental Impacts, Algorithm Robustness, and Performance Evaluation</td>
</tr>
<tr>
<td>7</td>
<td>Location-Aware Access Control: Scenarios, Modeling Approaches, and Selected Issues</td>
</tr>
<tr>
<td>8</td>
<td>Location-Based Services and Privacy</td>
</tr>
<tr>
<td>9</td>
<td>Protecting Privacy in Location-Based Applications</td>
</tr>
<tr>
<td>10</td>
<td>Presence Services for the Support of Location-Based Applications</td>
</tr>
<tr>
<td>11</td>
<td>Data-Flow Management for Location-Based Service Applications Using the Zoning Concept</td>
</tr>
<tr>
<td>12</td>
<td>Assisted Global Navigation Satellite Systems: An Enabling Technology for High Demanding Location-Based Services</td>
</tr>
</tbody>
</table>

**Teaching methods:**
- Practical classes with software.
- Theoretical classes related with LBS concepts.
- Teaching language is Portuguese. If there are non-portuguese speaking students and or professors, the course will be in English.

**Grading methods:**
1st phase:
- Participation in class and assiduity (5%),
- 6 .NET applications per group (30%),
- Group case study presentation and forum (15%)
- Presentation of LBS topic (20%)
- Exam (30%).

2nd phase:
- 6 .NET applications (30%),
- Exam (70%).

**Bibliography:**
- ArcGIS Runtime SDK for .NET, ESRI, disponível em https://developers.arcgis.com/net/