240ST1032 - Information Systems and Tics in Supply Chain

General Objectives

To provide the student with basic knowledge on the most important tools of present-day Information and Communications Technology (ICT) that can be applied to Logistics.

The course will provide the student with a panoramic view of Geographic Information Systems (GIS) with an emphasis on the application to transportation problems. We will also cover Radio-Frequency Identification (RFID).

More than one half of the course hours will be spent in the computer room to get hand-on experience with the installation and administration of a full-fledged GIS package.

Another important and characteristic feature of the course is that the student will be required to produce a presentation (approx. 40 minutes) and an associated written report on a subject strongly related to Logistics operations, on the one side, and computer (or electronics) applications, on the other side. The student can choose the subject of her work, which will be validated by the teacher.

Learning objectives of the subject

Prior skills

We will assume that the student has a basic background on Computer Science up to and including the use of text editors, and interaction with programs. The lectures and the development of the course takes this background for granted.

Requirements

Some exposure to Python and/or C.

Teaching methodology

The course will emphasize the practice of collaborative learning. Classes will consist of a theoretical corpus illustrated with examples and practical cases that will be taught in the 3 weekly hours of lectures. The student will be supplied with reading material, exercises and guidelines to complement and expand the lectures teaching material. The students will be assigned practical cases to be solved during the course.

Prior skills

We will assume that the student has a basic background on Computer Science up to and including the use of text editors, and interaction with programs. The lectures and the development of the course takes this background for granted.

Requirements

Some exposure to Python and/or C.

Teaching methodology

The course will emphasize the practice of collaborative learning. Classes will consist of a theoretical corpus illustrated with examples and practical cases that will be taught in the 3 weekly hours of lectures. The student will be supplied with reading material, exercises and guidelines to complement and expand the lectures teaching material. The students will be assigned practical cases to be solved during the course.

Learning objectives of the subject

General Objectives

To provide the student with basic knowledge on the most important tools of present-day Information and Communications Technology (ICT) that can be applied to Logistics.

The course will provide the student with a panoramic view of Geographic Information Systems (GIS) with an emphasis on the application to transportation problems. We will also cover Radio-Frequency Identification (RFID).

More than one half of the course hours will be spent in the computer room to get hand-on experience with the installation and administration of a full-fledged GIS package.

Another important and characteristic feature of the course is that the student will be required to produce a presentation (approx. 40 minutes) and an associated written report on a subject strongly related to Logistics operations, on the one side, and computer (or electronics) applications, on the other side. The student can choose the subject of her work, which will be validated by the teacher.
## Study load

<table>
<thead>
<tr>
<th>Study load</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total learning time:</strong></td>
<td>125h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hours medium group:</td>
<td>30h</td>
<td>24.00%</td>
<td></td>
</tr>
<tr>
<td>Hours small group:</td>
<td>15h</td>
<td>12.00%</td>
<td></td>
</tr>
<tr>
<td>Self study:</td>
<td>80h</td>
<td>64.00%</td>
<td></td>
</tr>
</tbody>
</table>
**Information Systems and ICTs in the supply chain**

**Description:**
1. Introduction to Geographic Information Systems.

   The need of a model to support the formal representation of the geographical nature of the world. Logistics happens on a celestial corpse known as Earth. The problems posed by the fact that the earth is (almost) a sphere. Early GIS programs. Spatial relationships: Topology.

2. Fundamentals of Geographic Information Systems


3. Installation of gvSIG

   Why QGIS?. Choices of Python. Variants of QGIS. The choice between gvSIG and QGIS.

4. Spatial Data Infrastructure


5. Location of a dispatching hub.

   The problem of the firefighting base in La Rioja.

6. RFID


7. Presentations.

   First subject assignment round: The students' proposals. Second round: The teacher's proposals for students that have not decided on a subject of their own interest.
### Related activities:
Intensive interaction with the student's own computer.

### Specific objectives:
The student will learn the basic techniques to:

- Install a GIS package on her/his computer.
- Analyze a facilities location problem with the aid of a GIS program.
- Identify the needs of information to feed a GIS database.
- Search the repositories of spatial data.
- Apply basic algorithms to solve a facilities location problem.
- Analyze and interpret the results and draw practical conclusions to support decisions.
- Implement object identification (RFID, bar codes).

### Qualification system
The final score will be the weighted combination of the midterm examination, the written essay and oral exam when at least one of them is higher than 4 points.

The midterm examination will have a weight of 0.3, the oral presentations 0.4 and the written essay 0.3.

### Regulations for carrying out activities
The assessment will combine the qualifications of the midterm examination, the final work, corresponding to the written essay to be submitted before the end of the scheduled tuition calendar, with the qualification of the presentation performed by the student during the semester.

### Bibliography

#### Basic:


#### Others resources:

- **Computer material**
  - PC
    - Resource