The study and Knowledge of the theory of vibrations is of his stability and to assure his movement is of great application inside the field of activities of the engineering especially. The vibratory analysis must be applied to machinery and facilities to guarantee his stability and to assure his maintenance. Also it is important from the point of view of comfort and affectation of workers or of users in general or of users.

The acústica is related to the vibrations because the sound is the perception of the vibration of the air, and also this one is a factor with increasing interest in the company and consequence, in the Engineering. For an engineer is important to understand the physical phenomena of generation and spread of the vibrations and the sound, to be able to use the equipments of measure and the procedures and existing tools of calculation and finally, apply technologies of control of noise and vibrations. Then, the principal aims are:

- Comprehension of the physical phenomena that intervene
- Knowledge of the technologies of calculation and measure
- Recognition of the best solutions opposite to a vibroacoustic problem.
820451 - AVM - Acoustics and Vibrations

Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group: 45h</th>
<th>30.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group: 0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Hours small group: 15h</td>
<td>10.00%</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Self study: 90h</td>
<td>60.00%</td>
</tr>
</tbody>
</table>

Content

**(ENG) Vibracions**

**Learning time:** 82h 30m
- Theory classes: 30h
- Laboratory classes: 7h 30m
- Self study: 45h

**Description:**
(ENG) 1.1. Vibracions mecàniques d'un grau de libertat. Vibració forçada, ressonància, aïllament de vibracions.
1.2. Equació de Lagrange per a sistemes conservatius i no conservatius.
1.3. Dos graus de libertat. Modos proprio. Equacions del moviment
1.4. Aïllament de vibracions
1.5 Anàlisi de senyal dinàmica:anàlisi de Fourier, quantificació de les magnituds mesurable.
1.6. Mesura i anàlisi de vibracions per determinació l'estat i comportament d'una estructura o màquina.

**Specific objectives:**
(ENG) Coneixement dels fenòmens físic que determinen la vibració en sòlids. Presentació dels procediments i equips de mesura habituals. Solució de problemes teòrics i pràctics. Implicacions ambientals i legals.

**(ENG) Acústica**

**Learning time:** 82h 30m
- Theory classes: 30h
- Laboratory classes: 7h 30m
- Self study: 45h

Qualification system

Exam 1: 25 %
Exam 2: 25 %
Exercises/Reports: 25 %
Guided activities: 25 %

Regulations for carrying out activities

The procedure and instructions for the accomplishment of the tests will be specified for each of them.