Degree competences to which the subject contributes

Specific:
1. Understanding and mastery of basic concepts about the general laws of mechanics, thermodynamics and electromagnetism fields and waves and their application to solving problems in engineering.

Transversal:
2. TEAMWORK - Level 1. Working in a team and making positive contributions once the aims and group and individual responsibilities have been defined. Reaching joint decisions on the strategy to be followed.

Learning objectives of the subject

Providing an understanding and domain of basic principles of the Physics, in its aspect of Mechanics.
On overcoming the subject, student will have to demonstrate:
Knowledge and skills in vectorial algebra and its application to problems of statics.
Knowledge and skills in kinematics of particles and solids in movement.
Knowledge and skills in laws of the dynamics applied to particles and solids.
Knowledge of fluids statics.
## Study load

<table>
<thead>
<tr>
<th></th>
<th>Hours large group:</th>
<th>Hours medium group:</th>
<th>Hours small group:</th>
<th>Self study:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total learning time:</strong></td>
<td>150h</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>32h</td>
<td>14h</td>
<td>14h</td>
<td>90h</td>
</tr>
<tr>
<td></td>
<td>21.33%</td>
<td>9.33%</td>
<td>9.33%</td>
<td>60.00%</td>
</tr>
</tbody>
</table>
# Content

## 1. Scalar and vectors.

**Learning time:** 15h  
Theory classes: 3h  
Practical classes: 1h  
Laboratory classes: 4h  
Self study: 7h

## 2. Kinematic and dynamic of particle and systems.

**Description:**  
Particle kinematics.  
Relative motion.  
Newton laws.  
Work ans energy.  
Dynamics of systems of particles.  
Collisions.

**Related activities:**  
(ENG) 1,2,3,4,6,7,8

**Learning time:** 76h  
Theory classes: 17h  
Practical classes: 8h  
Laboratory classes: 4h  
Self study: 47h

## 3. Kinematics and dynamics the rigid body.

**Description:**  
Kinematics of the rigid body.  
Slidings vectors.  
Dynamic of the rigid body.  
Statics.

**Related activities:**  
(ENG) 1,2,3,4,5,6,7,8

**Learning time:** 43h  
Theory classes: 9h  
Practical classes: 4h  
Laboratory classes: 4h  
Self study: 26h
### 4. Statics Fluids.

<table>
<thead>
<tr>
<th>Learning time: 16h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory classes: 3h</td>
</tr>
<tr>
<td>Practical classes: 1h</td>
</tr>
<tr>
<td>Laboratory classes: 2h</td>
</tr>
<tr>
<td>Self study: 10h</td>
</tr>
</tbody>
</table>

**Description:**
(ENG) Pressió: mesura i unitats.
Principis de Pascal i Arquimedes.

**Related activities:**
(ENG) 1, 2, 3, 4, 5, 6, 7, 8
## Planning of activities

| ACTIVITY 1. THEORY SESSIONS | Hours: 65h  
Theory classes: 28h  
Self study: 37h |
|-----------------------------|-----------------|
| ACTIVITY 2. PRACTICAL SESSIONS | Hours: 51h  
Practical classes: 14h  
Self study: 37h |
|-----------------------------|-----------------|
| ACTIVITY 3. LABORATORY | Hours: 24h  
Laboratory classes: 12h  
Self study: 12h |
|-----------------------------|-----------------|
| ACTIVITY 4. EVALUATION TEST 1 | Hours: 2h  
Theory classes: 2h |
|-----------------------------|-----------------|
| ACTIVITY 5. EVALUATION TEST 2 | Hours: 2h  
Theory classes: 2h |
|-----------------------------|-----------------|
| ACTIVITY 6. LABORATORY EVALUATION TEST | Hours: 2h  
Laboratory classes: 2h |
|-----------------------------|-----------------|
| ACTIVITY 7. CONTINUOUS EVALUATION TEST IN ATENEA WEB | Hours: 4h  
Self study: 4h |
The final qualification is the sum of the following partial qualifications:

\[ N_{\text{final}} = 0.35 \times N_{1A} + 0.40 \times N_{2A} + 0.10 \times NL + 0.15 \times N_{AC} \]

- **Nfinal**: final qualification
- **N1A**: qualification of the First Evaluation (activity 4)
- **N2A**: qualification of the Second Evaluation (activity 5)
- **NL**: qualification of the Laboratori mark (activities 3 y 6)
- **NAC**: qualification of the Continuous Evaluation

Unsatisfactory results from the first evaluation (N1A) may be pass on a second attempt performing, in the second evaluation, an extended test covering the first and second evaluations. All enrolled students are allowed to perform this extended test. The qualification obtained in the second extended evaluation (N2A) will replace the qualification from the first evaluation if \( N_{2A} \times 0.75 \) is greater than \( N_{1A} \times 0.35 + N_{2A} \times 0.4 \).

The continuous evaluation consists on making different activities during the course, individual as well as in group, in the classroom and out of this. Part of these activities are the ‘tests of continuous evaluation in ATENEA’ (activity 7).

**Regulations for carrying out activities**

If any of programmed activities is not carried out, it will be considered as not punctuated.
Bibliography

Basic:


Complementary:


Others resources:

Hyperlink

http://atenea.upc.edu/moodle/

http://aransa.upc.es/

http://www.ehu.es