330528 - CEV - Structural Calculations of the Vehicle

Coordinating unit: 330 - EPSEM - Manresa School of Engineering
Teaching unit: 750 - EMIT - Department of Mining, Industrial and ICT Engineering
Academic year: 2019
Degree: BACHELOR'S DEGREE IN AUTOMOTIVE ENGINEERING (Syllabus 2017). (Teaching unit Compulsory)
ECTS credits: 6
Teaching languages: Catalan, Spanish, English

Teaching staff
Coordinator: Dra. Maria Niubó Eslava i Dr. J.J. de Felipe Blanch
Others: Prof. Prepedigno Martín Villanueva

Degree competences to which the subject contributes

Basic:
CB3. That students have the ability to gather and interpret relevant data (usually within their area of study) to make judgments that include a reflection on relevant social, scientific or ethical issues.
CB4. Students can transmit information, ideas, problems and solutions to a specialized and non-specialized audience.

Specific:
CE26. Basic knowledge and application of environmental technologies and sustainability (Specific competence of the mention of Industrial Technologies).

General:
CG1. Ability to write and develop projects in the field of automotive engineering for the construction, renovation, repair, maintenance, recycling, manufacture, installation, assembly or operation of: structures, mechanical equipment, energy installations, electrical and electronic installations, plants and industrial plants and manufacturing and automation processes.
CG2. Capacity for management of the activities that are the subject of the engineering projects described in the previous section.
CG3. Knowledge of basic and technological subjects that will enable students to learn new methods and theories and that will endow them with the versatility needed to adapt to new situations.
CG4. Ability to solve problems with initiative, decision-making, creativity, critical reasoning and to communicate and transmit knowledge, skills and skills in the field of automotive engineering.
CG7. A capacity for analysing and assessing the social and environmental impact of technical solutions.

Transversal:
1. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.
2. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.
3. TEAMWORK - Level 3. Managing and making work groups effective. Resolving possible conflicts, valuing working with others, assessing the effectiveness of a team and presenting the final results.

Learning objectives of the subject
Study load

<table>
<thead>
<tr>
<th></th>
<th>Total learning time: 150h</th>
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<tbody>
<tr>
<td>Hours large group:</td>
<td>30h</td>
</tr>
<tr>
<td>Hours medium group:</td>
<td>0h</td>
</tr>
<tr>
<td>Hours small group:</td>
<td>30h</td>
</tr>
<tr>
<td>Guided activities:</td>
<td>0h</td>
</tr>
<tr>
<td>Self study:</td>
<td>90h</td>
</tr>
</tbody>
</table>
# Content

## 1. Estructura dels vehicles: bastidors, xassís i carrosseria (ENG)

**Description:**
ENG

**Learning time:** 10h  
Theory classes: 2h  
Laboratory classes: 2h  
Self study: 6h

## 2. Introducció a l'anàlisi estructural (ENG)

**Description:**
ENG

**Learning time:** 20h  
Theory classes: 4h  
Laboratory classes: 4h  
Self study: 12h

## 3. Principi de Treball Virtual (ENG)

**Description:**
ENG  
**Specific objectives:**
ENG

**Learning time:** 30h  
Theory classes: 6h  
Laboratory classes: 6h  
Self study: 18h

## 4. Mètode de la Flexibilitat (ENG)

**Description:**
ENG

**Learning time:** 30h  
Theory classes: 6h  
Laboratory classes: 6h  
Self study: 18h
### 5. Mètode de la Rigidesa (ENG)

**Description:**
ENG

**Learning time:** 30h
- Theory classes: 6h
- Laboratory classes: 6h
- Self study: 18h

### 6. Unions (ENG)

**Description:**
ENG

**Learning time:** 30h
- Theory classes: 6h
- Laboratory classes: 6h
- Self study: 18h
# Planning of activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hours: 16h</th>
</tr>
</thead>
</table>
| **1. Tipologies de bastidors, xassís i carrosseria (ENG)** | Theory classes: 1h  
Self study: 15h |
| **2. Tensions i esforços en una estructura (ENG)** | Theory classes: 1h  
Self study: 15h |
| **3. Principi de treball virtual (ENG)** | Theory classes: 1h  
Self study: 15h |
| **4. Mètode de la flexibilitat (ENG)** | Theory classes: 1h  
Self study: 15h |
| **5. Mètode de la rigidesa (ENG)** | Theory classes: 1h  
Self study: 15h |
| **6. Examen (ENG)** | Theory classes: 1h  
Self study: 15h |
Bibliography

Basic:

Complementary:

Others resources:
ENG. En el campus digital "ATENEA"