220129 - Motorbikes Design and Secrets

Coordinating unit: 205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 737 - RMEE - Department of Strength of Materials and Structural Engineering
Academic year: 2019
Degree: BACHELOR’S DEGREE IN AEROSPACE TECHNOLOGY ENGINEERING (Syllabus 2010). (Teaching unit Optional)
BACHELOR’S DEGREE IN INDUSTRIAL TECHNOLOGY ENGINEERING (Syllabus 2010). (Teaching unit Optional)
BACHELOR’S DEGREE IN AEROSPACE VEHICLE ENGINEERING (Syllabus 2010). (Teaching unit Optional)
ECTS credits: 3
Teaching languages: English

Teaching staff
Coordinator: Rafael Weyler
Others: Alcalá Vergara, Daniel

Teaching methodology
The course is divided into parts:
Theory classes
The theoretical sessions will explain basic concepts of design and how the motorcycle and some of its components works. The explanations will include the motorcycle physics and dynamics and possible improvements through motorcycle and human interaction models.
Practical classes
Practical classes are done in order to understand the importance of the theoretical concepts. The students will get in touch with real machines and how they are designed, manufactured and tuned.

Learning objectives of the subject
This course is intended to introduce students into the engineering applications from the user point of view and not as an engineer, who does not necessarily have such training. This course will focus on a highly technical and specialized automotive discipline such as motorcycling, in which almost everything is related to engineering. It is proposed to show the importance of proper communication, as well as how technical concepts must be properly summarized, transmitted and documented in accordance with the purpose of the device designed. It is also of vital importance and at the same time is overlooked, the role of engineers have into the specification of user skills or the training they should receive in order to manage properly the designed devices.
The course will pay special attention on all these concepts. It will be organized into theoretical lectures and practical classes.

Study load

<table>
<thead>
<tr>
<th>Total learning time: 75h</th>
<th>Hours large group: 30h</th>
<th>40.00%</th>
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<tbody>
<tr>
<td>Self study:</td>
<td>45h</td>
<td>60.00%</td>
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## Content

<table>
<thead>
<tr>
<th>Module 1: Theory</th>
<th>Learning time: 45h</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 20h</td>
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<tr>
<td></td>
<td>Self study: 25h</td>
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</tbody>
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**Description:**
1. Introducing Motorcycles
2. Motorcycle Mechanics
3. Dynamic Principles
4. Chassis Design
5. Alternative and Advanced Designs

**Related activities:**
- Theoretical Sessions
- Activity 1: Assignments

<table>
<thead>
<tr>
<th>Module 2: Applied Activities</th>
<th>Learning time: 30h</th>
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<tbody>
<tr>
<td></td>
<td>Theory classes: 10h</td>
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<tr>
<td></td>
<td>Self study: 20h</td>
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**Description:**
1. Motorcycle Racing Session

**Related activities:**
- Practical Sessions
- Activity 2: Project Design

## Qualification system

Activity 1: 50%
Activity 2: 50%
Bibliography

Basic:


Complementary:
