Course guides
220146 - 220146 - Uav Research & Development Project

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 732 - OE - Department of Management.

Degree:
- BACHELOR’S DEGREE IN AEROSPACE TECHNOLOGY ENGINEERING (Syllabus 2010). (Optional subject).
- BACHELOR’S DEGREE IN AEROSPACE VEHICLE ENGINEERING (Syllabus 2010). (Optional subject).
- BACHELOR’S DEGREE IN INDUSTRIAL TECHNOLOGY ENGINEERING (Syllabus 2010). (Optional subject).
- BACHELOR’S DEGREE IN AUDIOVISUAL SYSTEMS ENGINEERING (Syllabus 2009). (Optional subject).
- BACHELOR’S DEGREE IN INDUSTRIAL DESIGN AND PRODUCT DEVELOPMENT ENGINEERING (Syllabus 2010). (Optional subject).
- BACHELOR’S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Optional subject).
- BACHELOR’S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Optional subject).
- BACHELOR’S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Optional subject).
- BACHELOR’S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2009). (Optional subject).
- BACHELOR’S DEGREE IN TEXTILE TECHNOLOGY AND DESIGN ENGINEERING (Syllabus 2009). (Optional subject).

Academic year: 2020  ECTS Credits: 3.0  Languages: English

LECTURER

Coordinating lecturer: Lordan Gonzalez, Oriol

Others:

TEACHING METHODOLOGY

The course is divided into four parts:
- Theory sessions
- Activity sessions
- Project sessions
- Self-study

In the theory sessions (in the classroom), lecturers will introduce the theoretical basis of the concepts and methods behind UAVs and illustrate them with examples appropriate to facilitate their understanding.

In the activity sessions (in the classroom), lecturers will guide students in applying theoretical concepts to develop R&D UAV projects based on quadcopters.

In the project sessions (in the classroom), students will apply the theoretical concepts to the project. The course is hands on oriented through the activity and project sessions.

Students, independently, will need to work on the materials provided by lecturers in order to develop the project. The lecturers provide the syllabus and monitoring of activities (by ATENEA).

LEARNING OBJECTIVES OF THE SUBJECT

The main objective of the course is to understand the needs of the UAVs industry. In order to do so students will develop a R&D UAV project such as implementing a parachute for 1kg quadcopter, develop a system to record in 360° or 3D with a UAV or a suitable idea that the student wants to develop. This project integrates knowledge of multiple areas of engineering with a hands on approach. This course can be complemented with the Bachelor’s Thesis.
STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Self study</td>
<td>45,0</td>
<td>60.00</td>
</tr>
<tr>
<td>Hours large group</td>
<td>30,0</td>
<td>40.00</td>
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</tbody>
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Total learning time: 75 h

CONTENTS

Module 1: UAV Basics

Description:
Introduction to UAVs and how they work

Related activities:
Assignment 1
Assignment 2

Full-or-part-time: 35h
Theory classes: 15h
Self study: 20h

Module 2: Object detection

Description:
Design and develop an R&D project using or improving a UAV

Related activities:
Assignment 3
Assignment 4

Full-or-part-time: 40h
Theory classes: 15h
Self study: 25h

GRADING SYSTEM

The final grade depends on the following assessment criteria:

Assignment 1: 25%
Assignment 2: 25%
Assignment 3: 25%
Assignment 4: 25%

As there are no written tests, there won't be any exam to retake.