205088 - Power Transmission Systems (Fluid Power) II

Coordinating unit: 205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 729 - MF - Department of Fluid Mechanics
Academic year: 2019
Degree: MASTER'S DEGREE IN INDUSTRIAL ENGINEERING (Syllabus 2013). (Teaching unit Optional)
ECTS credits: 3

Teaching languages: Catalan

Teaching staff

Coordinator: ESTEVE CODINA MACIÀ
Others: MIQUEL TORRENT GELMA
ANGEL COMAS AMENGUAL
ESTEVE COMAS CESPEDES

Prior skills

It is advisable to follow this course correctly to have previously completed the subject 220260 Power Transmission Systems.

Teaching methodology

- Face-to-face practical work sessions.
- Independent learning and exercises.
- Preparation and completion of group activities subject to assessment.

This subject will be completely practical (workshop / laboratory). Most practical sessions are devoted to experimenting and conducting experimental tests required for characterization of components and that of a hydraulic transmission. Other sessions are focused on solving examples and proposing solutions for real cases associated with the design and assembly of power transmission systems for vehicles and mobile machinery. Teachers will introduce the concepts and methods needed and guide students in applying theoretical concepts to solve practical problems. The course is developed through workshop sessions which may include theoretical presentations with the help of audiovisual media and numerical simulations.

Students, as a team, must work through the materials provided by the teachers and analyze the results of the workshop sessions, in order to establish and assimilate the concepts.

Learning objectives of the subject

At the end of the course, the student must have:
- Knowledge of the elements of power transmission systems used in self-propelled machines and vehicles (from the primary motor drive to the undercarriage and auxiliary units (tools))
- Ability to design and optimize a power transmission (mechanical and hydrostatic)
- Ability to experience and investigate a real power transmission (mechanical and hydrostatic)
# Study load

<table>
<thead>
<tr>
<th>Total learning time: 75h</th>
<th>Hours large group: 19h</th>
<th>25.33%</th>
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<tbody>
<tr>
<td></td>
<td>Hours medium group: 0h</td>
<td>0.00%</td>
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<tr>
<td></td>
<td>Hours small group: 8h</td>
<td>10.67%</td>
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<td>Guided activities: 0h</td>
<td>0.00%</td>
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<td>Self study: 48h</td>
<td>64.00%</td>
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## Content

### Module 1: ANALYSIS

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<th>Learning time: 39h</th>
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<tr>
<td>Theory classes: 19h</td>
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<td>Self study: 20h</td>
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**Description:**
Theoretical / experimental analysis of a power transmission (mechanical / hydraulic)

**Related activities:**
- Identification of components and documentation
- Estimation of the benefits on the basis of theoretical models and technical documentation (catalogs, technical notes, etc.)
- Planning of the experimental tests necessary for the characterization of the transmission.
- Experimentation (with the presence of a tutor)
- Acquisition and treatment of the results obtained in the experiment
- Critical analysis of results (theoretical vs. experimental)
- Conclusions
- Drafting Final report activity

### Module 2: DESIGN

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<th>Learning time: 36h</th>
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<tr>
<td>Laboratory classes: 8h</td>
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<tr>
<td>Self study: 28h</td>
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**Description:**
Design of a power transmission (mechanical / hydraulic)

**Related activities:**
- Definition of duty cycle
- Design of the architecture.
- Pre-selection of the necessary components
- Theoretical evaluation of the design
- Requirements for security (active and passive)
- Plan of route and definition of the specification of the conditions required for its actual implementation in workshop / laboratory
- Drafting final report activity
Qualification system

The evaluation system will be based on 2 monitoring controls and 2 specific reports on activities carried out:

- Monitoring control of the Laboratory Practices:
  (2 sessions with control, weight: 10% for each session with control). Total weight 20%
  Specific report
  - 1st Evaluation: Final report on Module 1 activities, weight: 45%
  - 2nd Evaluation: Final report on Module 2 activities, weight: 35%

The control sessions will be test type and last about 30 minutes the day and time indicated at the class hours you practice (laboratory). It will be resolved in groups of two people.

The final reports of each module will be made by the students, mainly individually, to deliver their corresponding resolution through the ATENEA platform at the fixed delivery date.

Students may be asked to submit work in groups they must submit and may also be asked to present publicly in application sessions.

* The unsatisfactory result of the two evaluations (final reports) and the monitoring controls may be redirected by means of a written test to be performed on the day (official date and time) set in the academic calendar for the reconduction of bimonthly subjects. This test can be accessed by all students with a total score of less than 5.
  The written test will consist of one or two problems related to the contents of modules # 1 and 2. The test grade is between 0 and 10,
  If the final grade after the reconduction is less than 5.0, it will replace the initial grade only if it is higher. If the final grade after the reconduction is greater than or equal to 5.0, the final grade for the course will be passed 5.0.

Bibliography

Basic:


Complementary:


Others resources:

ATENEA