

30034 - Combustion Engines

Información del Plan Docente

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| Academic Year | 2016/17 |
| Academic center | 110 - Escuela de Ingeniería y Arquitectura |
| Degree | 436 - Bachelor's Degree in Industrial Engineering Technology |
| ECTS | 6.0 |
| Course | 4 |
| Period | First semester |
| Subject Type | Optional |
| Module | --- |

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

1. Master classes given to the entire group. The professor will explain the basic principles of the subject and solve realistic problems some representative cases. In parallel, the student must perform personal work of study.

2. Laboratory practices which are distributed throughout the semester. The work will be evaluated and will be part of the final grade for the course. Practices are held in small groups.

3. Tutored work in small groups (couples ideally): students solve a problem of actual application.

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4. Additional proposals of exercises, questions and problems. This encourages autonomous work for the resolution of the exercises.

5. Academic tutoring: Professor procedures in place to pose and resolve the student doubts.

5.2.Learning activities

5.3.Program

Contents:

- Introduction. Comparison of actual tendencies on design and application of internal combustion engines.
- Real cycles. Determination and interpretation.
- Definition of fundamental engine parameters: geometrical and operating.
- Engine performance curves and their analysis.
- Similarity laws for four stroke engines.
- Principles of gas exchange processes.
- Exhaust process. Silencer elements.
- Fuel characteristics.
- Combustion process. Characteristic and influence factors.
- Engine emissions and treatment systems.
- Mechanical and heat losses. Cooling and lubrication.
- Principles of supercharging.

5.4.Planning and scheduling

5.5.Bibliography and recommended resources

The students could find basic references in the library site, clicking on <http://biblioteca.unizar.es/como-encontrar/bibliografia-recomendada>