Degree competences to which the subject contributes

Specific:
1. CE26. Applied knowledge of systems and fabrication process, METROLOGIA and quality control.

Transversal:
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. 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.
4. 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.

Teaching methodology

The sessions are divided into classes of theory, problems and laboratory practice. The lectures comprise the statements of the basic theoretical concepts of the topics of the course applied examples and exercises as described.
A class of problems, the teacher presents exercises applying the concepts they studied in classes of theory i proposed to solve them other students, individually or in groups.

Learning objectives of the subject

When finishing the subject the student has to be able to:

- Describe the main processes of formation used at industrial level.
- Use quality management tools and metrology applied to manufacturing processes.
- Choose the type of manufacturing process of a piece based on the design, material and technological and environmental aspects.
340059 - PRFA-M4O12 - Manufacturing Processes

- Use, in a basic way, the machines of the manufacturing processes studied.
- Work in teams effectively, improving communication, distribution of tasks and group cohesion.
- Exhibits effective technical results.

<table>
<thead>
<tr>
<th>Study load</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total learning time</strong>: 150h</td>
<td></td>
</tr>
<tr>
<td>Hours large group:</td>
<td>45h</td>
</tr>
<tr>
<td>Hours medium group:</td>
<td>0h</td>
</tr>
<tr>
<td>Hours small group:</td>
<td>15h</td>
</tr>
<tr>
<td>Guided activities:</td>
<td>0h</td>
</tr>
<tr>
<td>Self study:</td>
<td>90h</td>
</tr>
</tbody>
</table>
### Content

<table>
<thead>
<tr>
<th>- Metrology and quality in manufacturing processes.</th>
<th>Learning time: 37h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description:</td>
<td>Theory classes: 12h</td>
</tr>
<tr>
<td>Measurement. Errors and uncertainty in the</td>
<td>Practical classes: 0h</td>
</tr>
<tr>
<td>measurement</td>
<td>Laboratory classes: 4h</td>
</tr>
<tr>
<td>Dimensional and geometric tolerances.</td>
<td>Self study: 21h</td>
</tr>
<tr>
<td>Settings.</td>
<td></td>
</tr>
<tr>
<td>Verifiers fixed dimensions. Gauges</td>
<td></td>
</tr>
<tr>
<td>Surface Finish</td>
<td></td>
</tr>
</tbody>
</table>

**Related activities:**
- A1 = Learning Assessment.
- A2 = Lab.
- A3 = Reporting.

**Specific objectives:**
- Calculate adjustments make mounting and control.
- Decide surface roughness depending on the application.
- Having quality concepts in all phases of the production process; estimate its difficulty and need, and know the different solutions adopted in the industry and the tools available.

<table>
<thead>
<tr>
<th>- Conforming processes by plastic deformation and machining.</th>
<th>Learning time: 35h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description:</td>
<td>Theory classes: 10h 30m</td>
</tr>
<tr>
<td>Hot deformation process</td>
<td>Practical classes: 0h</td>
</tr>
<tr>
<td>Cold deformation processes i cut</td>
<td>Laboratory classes: 3h 30m</td>
</tr>
<tr>
<td>Machining by chip removal. Features</td>
<td>Self study: 21h</td>
</tr>
</tbody>
</table>

**Related activities:**
- A1 = Learning Assessment.
- A2 = Lab.
- A3 = Reporting.

**Specific objectives:**
- Know the different types of deformation processes in hot, cold deformation i cut, its features and where they apply.
- Understand the concept of machining machining, advantages, machinery, and basic concepts of calculus.
### Conforming processes by casting and molding.

**Description:**
- Foundry. Sand casting
- Materials for molds
- Molding metal mold

**Related activities:**
- A1 = Learning Assessment.
- A2 = Lab.
- A3 = Reporting

**Specific objectives:**
- Know the most important molding processes and parameters that define them

**Learning time:** 18h 30m
- Theory classes: 6h
- Practical classes: 0h
- Laboratory classes: 2h
- Self study: 10h 30m

### Powder Metallurgy.

**Description:**
- Powder Metallurgy
- Arc welding, TIG, MIG, resistance
- Hard and soft soldering

**Related activities:**
- A1 = Learning Assessment.
- A2 = Lab.
- A3 = Reporting

**Specific objectives:**
- Know the main features and applications of Powder Metallurgy.
- Knowing the different welding technologies.

**Learning time:** 18h 30m
- Theory classes: 6h
- Practical classes: 0h
- Laboratory classes: 2h
- Self study: 10h 30m
### - Computer aided manufacturing.

<table>
<thead>
<tr>
<th>Learning time: 35h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory classes: 10h 30m</td>
</tr>
<tr>
<td>Practical classes: 0h</td>
</tr>
<tr>
<td>Laboratory classes: 3h 30m</td>
</tr>
<tr>
<td>Self study: 21h</td>
</tr>
</tbody>
</table>

**Description:**
Main concepts of computer aided manufacturing.
ISO programming.

**Related activities:**
- A1 = Learning Assessment.
- A2 = Lab.
- A3 = Reporting.

**Specific objectives:**
The student must know the concept of numerical control, their advantages, machinery, and basic programming concepts.

### (ENG) Proves d'avaluació individual

<table>
<thead>
<tr>
<th>Learning time: 6h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guided activities: 6h</td>
</tr>
</tbody>
</table>

**Description:**
Each student will make two single assessment tests and group work to be presented in public.
### Planning of activities

| A1. LEARNING ASSESSMENT | Hours: 5h  
Theory classes: 5h |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Training for the acquisition of knowledge and individual study activities.</td>
</tr>
<tr>
<td><strong>Support materials:</strong></td>
<td>Statement of the test.</td>
</tr>
<tr>
<td><strong>Descriptions of the assignments due and their relation to the assessment:</strong></td>
<td>Resolution in writing or oral, justified, and individual test questions.</td>
</tr>
<tr>
<td><strong>Specific objectives:</strong></td>
<td>Assess the level of knowledge and competencies of the subject. Resolution in writing or an oral test, justified individual issues.</td>
</tr>
</tbody>
</table>

| A2. PRACTICE | Hours: 11h  
Theory classes: 11h |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Development of a laboratory experimental work, scheduled and guided by Professor embodiment.</td>
</tr>
<tr>
<td><strong>Support materials:</strong></td>
<td>Reports preparatory process of the realization of the lab.</td>
</tr>
<tr>
<td><strong>Descriptions of the assignments due and their relation to the assessment:</strong></td>
<td>For each session of laboratory practice, a document of the work done will be delivered according to the conditions specified in each particular case.</td>
</tr>
</tbody>
</table>
| **Specific objectives:** | Recognize and apply some of the concepts studied in the theory activities.  
Explain and describe the practical phenomena observed in the laboratory. |

| A3. REPORTING | Hours: 4h  
Theory classes: 4h |
|---------------|-------------------|
| **Description:** | Work related to the contents of the course team.  
It will focus on the fabrication process of a commercial item that is manufactured using different processes and / or different materials and / or various heat treatments. |
| **Descriptions of the assignments due and their relation to the assessment:** | Work on paper and public presentation. |

### Qualification system

The training activities of learning and individual student study will be evaluated through written or oral tests: 80%.  
The training activities related to practical work is assessed by the following parameters: personal attitude, individual work developed, reporting on individual or team activities: 20%.  
Only the written tests, corresponding to 80% of the final mark, will be Reassessable.
Regulations for carrying out activities

The conditions for completion of each test shall be specified in each case, in good time.

Bibliography

Basic:


Complementary:

