

## 6. Rubric

The rubric presented in this section allows the evaluation of the design process. The evaluation criteria are in accordance with the objectives of the Teaching Guide of this course.

We define three Rubrics. Ability to work with the software and knowledge of standards are evaluated on one hand, and on the other non technical abilities, as are project management and innovation.

- a. Rubric of general aspects
- b. Rubric of CAD
- c. Rubric of planes

The Rubric of general aspects evaluates the new concepts added in the project, the final document, and the adherence to deadlines. At the same time, the rubric considers the personal attitude during the project execution.

The Rubric for CAD evaluates spatial vision, knowledge of the software and CAD strategies in general.

The Rubric for planes evaluates knowledge of technical drawing, and representation and definition of assemblies and parts.

The Rubrics should be used reinforcing the statements that better define the work. This way, it is possible to have a rapid idea of the results and of the learning evolution when the different rubrics are compared.

It is convenient to evaluate the work by groups of pairs, for example, two students of the same level, so that the work is examined under different points of view, promoting didactic discussions. If pairs are not possible, it can be done individually, or also, using self-evaluation.

### Rubric for general aspects

	<b>RIGHT</b>	<b>WRONG</b>
Concept	<p>The work is valid and it suits properly the initial requests.</p> <p>The result is original.</p>	<p>The work does not suit properly all the initial requests.</p> <p>The results are not appropriate.</p> <p>The result is not original.</p>
Document	<p>The work is properly presented.</p> <p>Vocabulary used is technically appropriated.</p>	<p>The work is not properly presented.</p> <p>Vocabulary used is no technical.</p>
Time	The project is delivered on time.	The project is delivered out of time.
Attitude	<p>The responses about the project are given using technical language.</p> <p>There was interest while searching information.</p> <p>There was effort in solving each phase of the process.</p> <p>There was attitude for team work.</p>	<p>There are no responses about the project or are given without using technical language.</p> <p>There was no search of information.</p> <p>There was no effort trying to solve each phase of the process.</p> <p>There was no attitude for team work.</p>
General	In general, the project has an outstanding finish.	In general, the project has a poor finish.

6.1. Table. Rubric for general aspects

## Rubric for CAD

	RIGHT	WRONG
Geometry	<p>Parts splitted into basic geometries match the function of those geometries.</p> <p>Operations related with a function are grouped.</p> <p>Geometry is completely defined and dimensioned.</p>	<p>Parts splitted into basic geometries do not match the function associated to those geometries.</p> <p>Operations related with a function are not grouped.</p> <p>Geometry is not completely defined and dimensioned.</p>
Operations	<p>Adequate selection of operations.</p> <p>Operations in logical order.</p> <p>Restrictions match design requests.</p>	<p>Selected operations are not adequate.</p> <p>Operations do not follow logical order.</p> <p>Restrictions do not match design requests.</p>
Modifications	<p>Dimensions and restriction that need to be modified are found very easily.</p> <p>Modifications can be made without problems.</p> <p>Operations that need to be erased do not affect the rest.</p>	<p>It is difficult to find dimensions and restrictions when they need to be modified.</p> <p>Modifications produce strange or impossible solutions.</p> <p>Operations that need to be erased affect the rest.</p>

6.2. Table. Rubric for CAD.

## Rubric for planes

	RIGHT	WRONG
Identification box and text	<p>Data complete.</p> <p>Standard writing in the whole plane with the adequate orientation for reading.</p> <p>Extended identification box with the complete name for the standard parts.</p>	<p>Incomplete data or difficult to read.</p> <p>Standard writing, but size is small or orientation is not adequate</p> <p>Extended identification box follow no order, and name of standard parts is not appropriate.</p>
Scale	<p>Standardized and adequate to the format.</p> <p>All the scales used are reflected in the views and in the identification box.</p>	<p>No standardized or inappropriate.</p> <p>Badly applied.</p> <p>No reflected in plane.</p>
Result and process	<p>Precision in geometric constructions.</p> <p>Axis and significant points outlined.</p> <p>Right measurements.</p> <p>Logical, clear and ordered procedure easy to follow.</p> <p>Using European Projection System</p> <p>Minimum number of views, the more significant.</p> <p>Adequate cuts, properly executed, uniform and differenced strips.</p> <p>Clear, accurate and complete dimensioning.</p> <p>Tolerances and adjustments adequately shown in functional dimensions.</p> <p>Finishing of surfaces adequately indicated and surfaces are differenced.</p>	<p>Geometric constructions do not follow any method or are not accurate.</p> <p>Missing axis or significant points.</p> <p>Dimensions are not right.</p> <p>The procedure is not logical, is disordered or hard to follow.</p> <p>European Projection System is not used.</p> <p>Too much views and non significant views.</p> <p>Cuts not adequate, badly performed, striped is not uniform or differenced.</p> <p>Unclear, repeated or incomplete dimensioning.</p> <p>Tolerances and adjustments are not adequately indicated, or they are located in non functional dimensions.</p> <p>Finishing of surfaces are not adequately indicated, or surfaces are not differenced.</p>
Lines	<p>Use of two different widths.</p> <p>Adequate use of widths and type of lines.</p>	<p>Only one width employed.</p> <p>Inadequate use of widths and types of lines.</p>
Presentation	<p>Tracing is net, clear and neat.</p> <p>Adequate use of Formats.</p> <p>Standard folding.</p>	<p>Tracing not defined or it is not neat.</p> <p>Drawing out of the margins, or many overlaps.</p> <p>Folding does not follow standard rules.</p>

### 6.3. Rubric for Planes.