

Guideline to evaluate the portfolio developed in the Module 2. Design thinking: Creative engineering methods

Portfolio design instructions: instructions to create a portfolio to show the process and results, focus on the process:

1. Identification of a problem or necessity in your sector.
2. Selection of a methodology or process to follow.
3. Selection of 3 creative engineering methods.
4. Application of the creative engineering methods.
5. Presentation of the results and the solution achieved.
6. Creation of the portfolio (documenting the design thinking process).

The first thing to do is to choose the challenge in which to apply design thinking principles to solve real-world problems.

The teaching staff should come up with a small project related to the engineering in which the module is being implemented, appropriate to the academic level of the students and the schedule of the module.

Students should solve the challenge and create a portfolio to document their design thinking process.

In order to evaluate the portfolio, it will be checked that the following guidelines and requirements are met:

- Specific, basic and transversal competencies are developed and demonstrated on the portfolio:
 - o Ability to design, write and direct projects, in all their diversity and phases.
 - o Ability to use modern and creative techniques, skills and tools for engineering practice.
 - o Effective oral and written communication skills with ethics and social responsibility as a citizen and as a professional.
 - o Apply critical, logical and creative thinking to question reality, seek and propose innovative solutions at a formal, functional and technical level.
 - o Organization and planning capacity.
 - o Capacity for analysis and synthesis.
 - o Express yourself correctly, both orally and in writing, in the official languages.
 - o Use the basic tools of information and communication technologies (ICT) necessary for the exercise of the profession and for learning throughout the life.
 - o Develop for the exercise of citizenship that respects democratic culture, human rights and the gender perspective.
- A research phase has been carried out on the problem posed.
- Creative methods have been applied to the case study to propose multiple creative solutions.
- A review and evaluation of the possible solutions has been carried out and the best one has been chosen, explaining the criteria.

- The proposed solution has been tested.
- A clear and organised graphical summary showing the whole process is presented.
- Focus on the process: Have students maintain design journals or portfolios to document their design process, including sketches, ideation notes, prototypes, and reflections. This allows them to assess their ability to iterate, reflect, and communicate their design thinking journey.
- The graphic design is coherent throughout the document and the quality of the document has been worked on.

Rubric for portfolio assessment						
Item	Does not comply (0 points)	Insufficiently comply (0.25 points)	Sufficiently complies (0.5 points)	Complies very well (0.75 points)	Complies excellently (1 points)	Marks (0-1)
Identification of the problem or necessity.	Work has not been carried out.	The problem or necessity has not been properly identified.	The problem or necessity has been identified.	The problem or necessity has been identified and explained.	The problem or necessity has been identified and explained.	0-1
Research phase.	The research phase has not been carried out.	Some research has been carried out on the problem posed.	A research phase has been carried out on the problem posed.	A complete research phase has been carried out on the problem posed.	An excellent research phase has been carried out on the problem posed.	0-1
Selection of a methodology or process to follow.	No methodology has been selected.	A methodology has been selected but the process is not followed correctly.	A methodology has been selected and the process is followed correctly.	The best methodology has been selected for the problem at hand and the process is followed correctly.	The best methodology has been selected for the problem at hand and the process is followed excellently.	0-1
Creative methods.	No creative methods have been used.	Creative methods have been selected (at least 1) and applied to the case study to propose some solution.	Creative methods have been selected (at least 1) and applied to the case study to propose multiple creative solutions.	Creative methods have been selected (at least 2) and applied to the case study to propose multiple creative solutions.	Creative methods have been selected (at least 3) and applied to the case study to propose multiple creative solutions.	0-1
A review, evaluation and selection of the proposed solution.	No solution proposed.	The proposed solution does not fit the problem.	Possible solutions are proposed.	A review and evaluation of the possible solutions has been carried out, but the selected one is not the best.	A review and evaluation of the possible solutions has been carried out and the best one has been chosen, explaining the criteria.	0-1
Testing.	Testing has not been explained or carried out.	Testing process is proposed.	The testing process has been explained.	The testing process has been explained and the proposed solution has been tested.	The testing process has been explained and the proposed solution has been tested until it works.	0-1

Creation of the portfolio (documenting the design thinking process).	Portfolio has not been carried out.	A portfolio has been carried out.	A portfolio documenting the solution has been carried out.	A portfolio documenting the design thinking process and the solution has been carried out.	An excellent portfolio documenting the design thinking process and the solution has been carried out.	0-1
Summary.	Summary has not been carried out.	A summary showing the process is presented.	An organised summary showing the whole process is presented.	A clear and organised summary showing the whole process is presented.	A clear and organised graphical summary showing the whole process is presented.	0-1
Focus on the process.	The process is not showed.	The design process is barely showed.	The design process is showed.	The design process is showed, including sketches, ideation notes, prototypes, and reflections.	The design process is showed, including sketches, ideation notes, prototypes, and reflections. This allows them to assess their ability to iterate, reflect, and communicate their design thinking journey.	0-1
Graphic design, coherence and quality.	There is no graphic design or coherence, and there is a lack of quality.	The graphic design is not coherent throughout the document and there is a lack of quality.	The graphic design is coherent throughout the document and there is an acceptable quality.	The graphic design is coherent throughout the document and the quality of the document has been worked on.	The graphic design is coherent throughout the document and the quality of the document has excellently been worked on.	0-1
Total mark						0-10

