

SPIM-GM-905 Optimization of materials and products

Master Degree : Mechanical Engineering and Materials sciences

Reference number : SPIM-GM-905

Title of the subject : Optimization of materials and products

University component : UFR MIM

Coordinating lecturer : L. Germain : lionel.germain@univ-lorraine.fr

Semester : *Autumn*

Total hours of classes : 30h ECTS credits : 2

Teaching language : French

Courses proposed in English for exchange students : No

Course composition	Coef.	Number of hours		
		lectures	Tutorials	Practical works
Choice of materials		2		12
Analysis of the life cycle		4	4	8

During their professional activity, students will have to choose a material adapted to a specific use, as well as to take into account the notions of eco-conception

Prerequisites : having followed a program like a Master1 I2M

Skills to acquire

Being capable of optimizing the triptych Product / Process / Material according to the performance of the product and its environmental impact

Knowledge associates with skills

Choose a material and a process for the realization of a product

Optimize the Produced triptych / Process / material

Take into account the environmental factor in the choices of conception

Course syllabus

Choice of material and process

Various classes of materials, relevant properties in mechanical conception, and criterion of choice of the Material

Various process classes, referant characteristics and process choice criterior

Analysis of life cycle

Principle, interest and definition of the objectives of a study (ACL)

Qualitative inventory, Analysis of impact, numeric tools for analysis.