**COURSE 12: ADDITIVE MANUFACTURING FOR INDUSTRY 4.0**

Student’s name: …………………………………………………………………………………………………………………………………

**Worksheet 1.1 – LABORATORY 2**

This worksheet is provided to you so that you can register the progress of specific activities throughout the implementation of Laboratory 2.

1. **Briefly describe the structure of your non-demountable assembly.**

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1. **Provide the hand drawn sketch of your non-demountable assembly, identifying its main components. Mention the main design rules which apply when printing the product. Identify the physical working principle of your product.**

PRODUCT CONCEPT SKETCH

**Design rules**

…………………………………………………………………………………………………………………………………………………

**Working principle**

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1. **Mention the main CAD steps for each of the designed components.**

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1. **Specify the characteristics of your STL files for each component. Justify the differences in mesh parameters.**

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1. **Mention which 3D printing parameters you adjusted during optimization and how they influenced your build.**

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1. **Specify if the equipment required any specific preparation or maintenance procedures.**

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1. **Write down if your print required any additional adjustments (e.g. if you had printed fails and how you addressed them) and justify why.**

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1. **Mention if the removal of your parts or the post processing procedures were according to guides or if you performed any additional steps. Write down any problems you encountered during these stages and the measures you took to solve them.**

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1. **While assembling and testing of your non-demountable assembly, write down any flaws or inconsistencies. Break them down into three main flaws/ fails categories: bad design; improper printing parameters; inadequate equipment calibration & maintenance.**

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1. **Summarize the results you obtained during Laboratory 2 and propose improvement paths.**

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1. **Complete the following task:**

* **Task 01:**

Considering the case study given below, identify what is the main 3D printing technology used to manufacture the non-demountable assembly. Specify the used materials and their individual functions. Identify at least two areas of application of the presented product concept.  
  
You can find the case study at: <http://news.mit.edu/2016/first-3d-printed-robots-made-of-both-solids-and-liquids-0406>

Technology

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Materials and functions

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Applications

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