



## MSc in Manufacturing and Welding Engineering Design

**Subject:** Rapid Product Development (MDMD 512)

**Semester:** Spring 2017

**Lecturer:** Dr. Antonios Lontos ([eng.la@frederick.ac.cy](mailto:eng.la@frederick.ac.cy))

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### Course Assignment

In this assignment you have to design and show how to construct using rapid product development procedure a 3D laser system. The system will consist of the base, movement mechanism, 3D laser head and a portable laptop. The system has to be light, compact and easy to install in any place and direction.

The base will hold all the other components except from the laptop and will have a flange so the system can stand in any surface horizontal or vertical.

The movement mechanism will be a Stewart Mechanism so it can move in any direction in front of the object to be scanned. The Stewart Mechanism will have long pistons compare to the base.

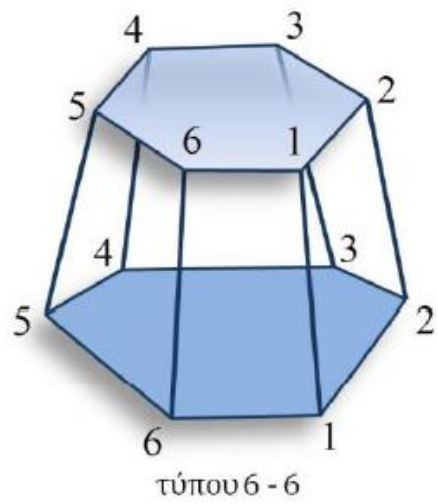
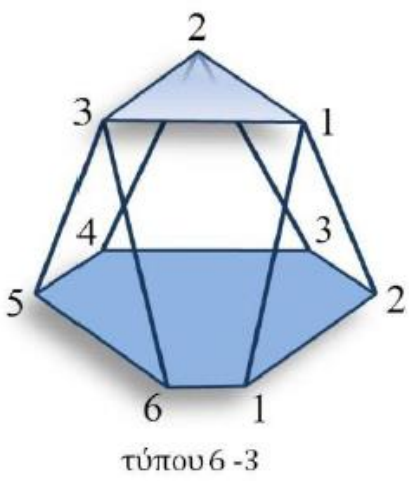
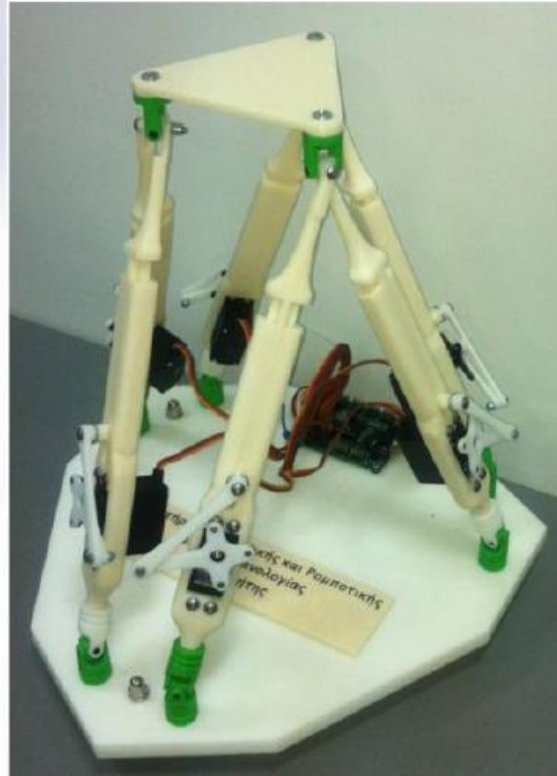
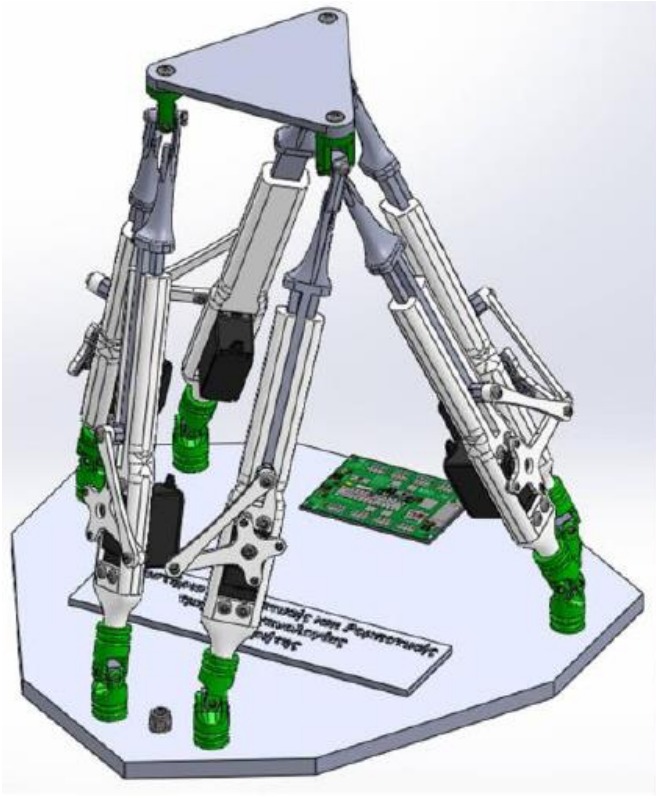
The 3D laser scanner will based on the top of the Stewart Mechanism and it can move in any direction according to the freedom degree of the mechanism.

What you have to do:

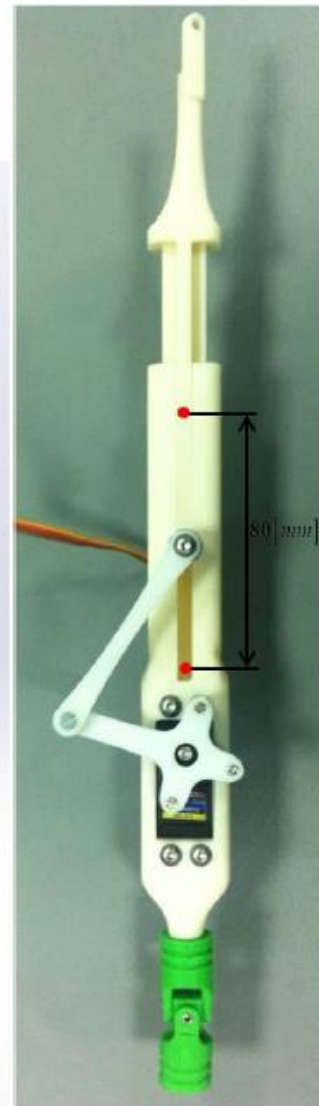
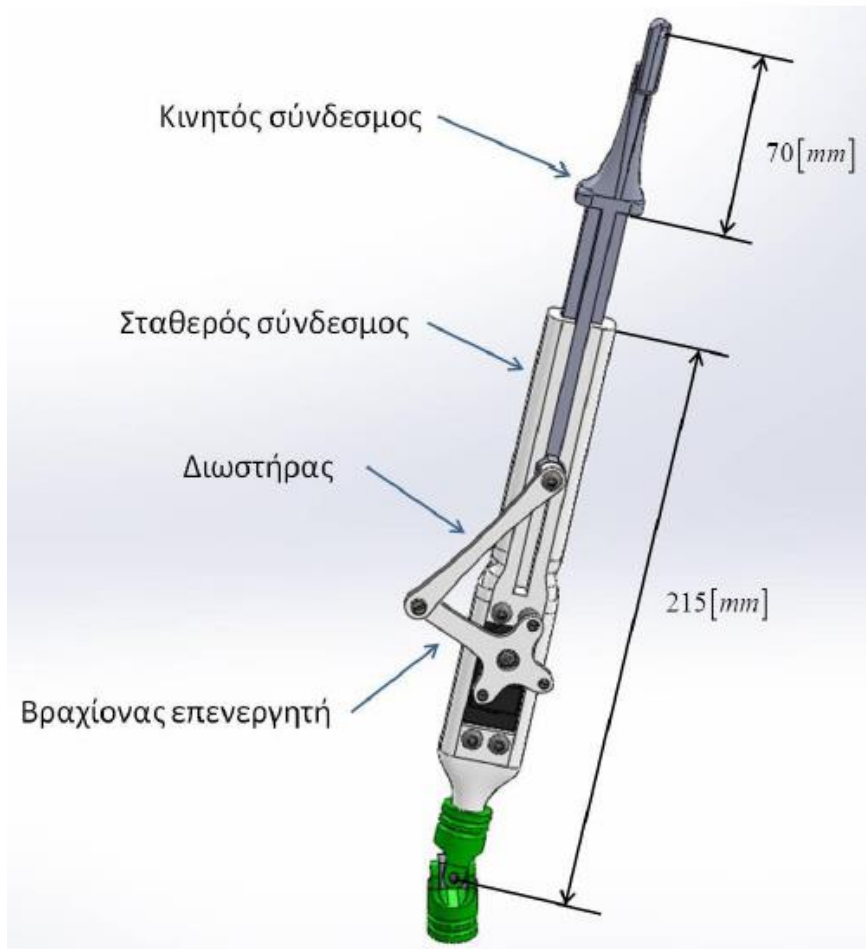
- Design Communication (CAD, solid modelling)
  - Design Methodology (design process, customer focus, integration of engineering science)
  - Prototyping (processes and their selection, materials selection, costs)
1. Develop your product from the beginning to the final stage. All decisions/approaches should be based on the engineering design and rapid product development.
  2. Assignment with 30-60 pages, Including document, pictures, photos and diagrams

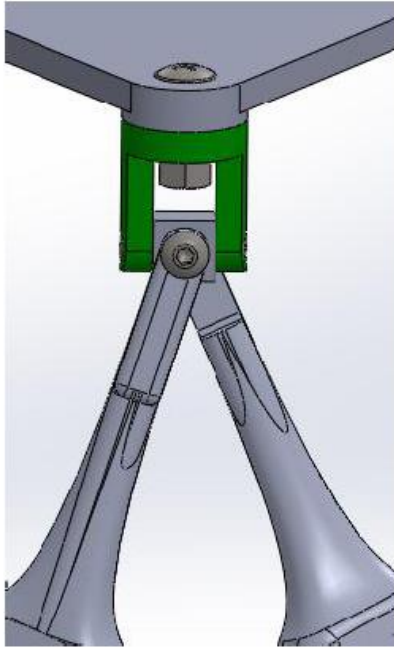
### 3. Main contents of the assignment:

1. Introduction
  - Background
  - Problem statement
  - Mission statement
2. Concept Design
  - Generation of alternatives
  - Analyses
  - Evaluation and recommendations
3. Configuration Design
  - Parts design
  - Assembly design
  - Construction drawings
4. Final 3D modeling and rapid prototyping
  - Rapid product development
  - 3D printing and construction of every part
  - Assembly of the 3D printed parts
  - Bill of materials
  - Product cost estimates
5. Conclusions



τύποι πλατφόρμας "Stewart"



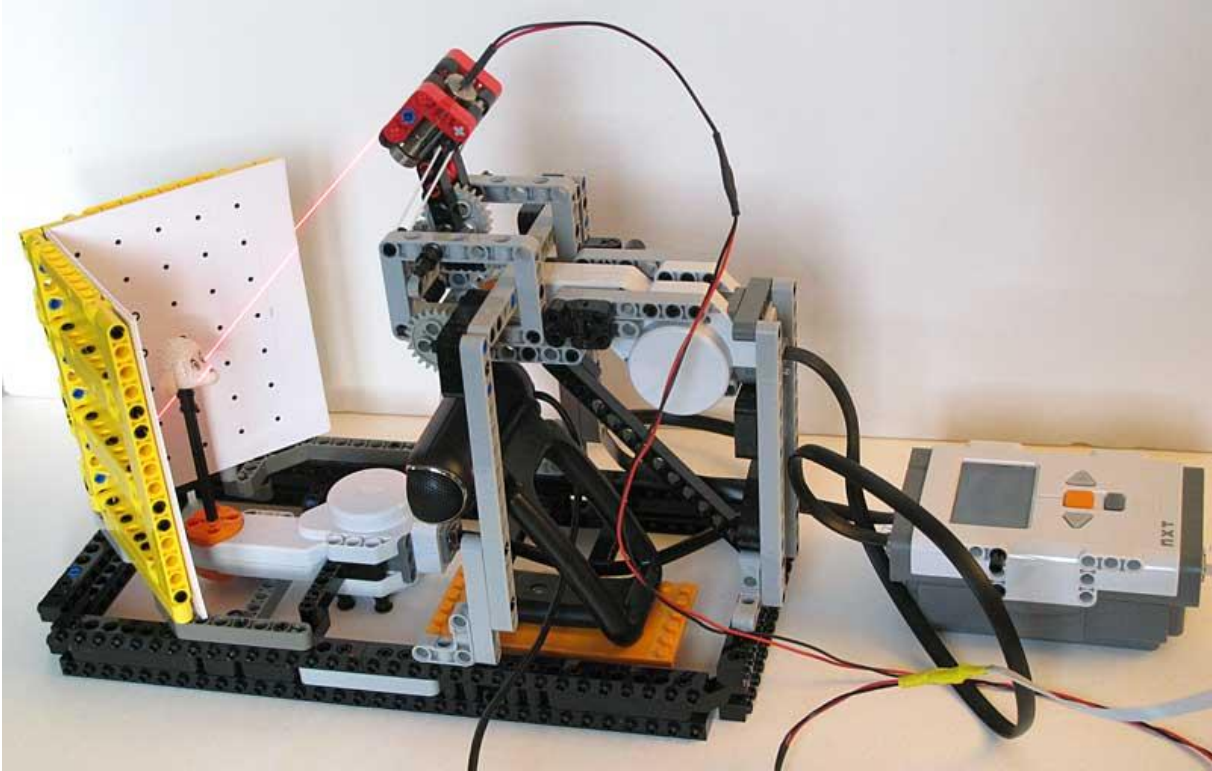


άρθρωση άνω βάσης  
(σχεδιασμένη - κατασκευασμένη)



άξονες  
πρισματικών αρθρώσεων

Examples for laser scanner on a base







**Measurement with VIVID 9i**

