

# GENERATIVE AND GEOMETRIC MODELLING - 2019/2020 – 1<sup>st</sup> sem.

Professor Luís Mateus.

## EXERCISE 2 (MIARQ – 4F)

31 of october 2019

**Title:** “*Developable shelter*”

### A. OBJECTIVES:

- Generalize the study of the geometric properties of developable surfaces.
- To understand and develop unrolling methods.
- To link architecture and geometry
- To develop the fluency with Rhinoceros software and Grasshopper plugin.

### B. METHODOLOGY:

#### 1<sup>st</sup> STEP – Conception

- Sketch a shape having in mind the idea of creating a small shelter using developable surfaces.

#### 2<sup>nd</sup> STEP – 3D modelling

- In Rhino/GH, model your idea.
- In Rhino/GH, proceed to the development of the surfaces.
- In Rhino, prepare a print layout where you should present the views of your model as well as the unrolled surfaces (use an appropriate scale and page format).
- Prepare a PDF print of the layouts.

#### 3<sup>rd</sup> STEP – Physical model

- Do a scaled physical model of an instance of the shelter using paper card.
- Take some pictures of the physical model.

#### 4<sup>th</sup> STEP – PDF Report

- Prepare a PDF report with no more than 5 to 6 pages describing and illustrating the work developed including all steps from one to three.

### C. ELEMENTS TO DELIVER:

- Report in PDF format.
- One \*.3DM file and one \*.GH file corresponding to the 2<sup>nd</sup> step of the work.

#### **D. DELIVERY:**

All the files should be zipped into one \*.ZIP file according to the following notation

**XXXXXXXX\_N.zip**

where:

**XXXXXXXX** corresponds to the student's number

**N** equals 2.

**XXXXXXXX\_N.zip** corresponds to the zipped folder where it was placed the files of the exercise.

The delivery limit date is the 23<sup>rd</sup> of November. Send the files through Wetransfer.

#### **E. EVALUATION CRITERIA**

- Schedule compliance.
- Report:
  - Quality of the report in terms of language.
  - Level and quality of description including steps one to three.
  - The maximum classification for the report is 5 points out of 20.
- Models and definitions:
  - Organization of the \*.3DM file and \*.GH resulting from 2<sup>nd</sup> step.
  - Level of development of 2<sup>nd</sup> step.
  - Correctness of the modelling process of 2<sup>nd</sup> step.
  - Organization of the \*.3DM file resulting from 2<sup>nd</sup> step.
  - The maximum classification for the models and definitions is 15 points out of 20.