INGEGNERIA PARAMETRICA

1° - 2° week

- General introduction to Grasshopper
    - List operation on simple data
      Looking at the several operations
    - Create geometry in Grasshopper or import from Rhino
      Case study: trave reticolare tra due generiche curve (Section 2 AT)
    - Transformations (move, rotations, scale, orient, graph mapper)
      Case study: Skyscraper design (Section 4 AT)
    - Curve studies (Curvature, perpendicular frame, discontinuity)
      Case study: Spline to Arc, a really powerful algorithm (Section 3 AT)
    - Surface studies (Curvature, perpendicular frame, splitting)
      Case study: Spatial truss (Section 3 AT)
    - Mesh introduction
      Case study: Approach to make an organic shape (Section 6 AT)

3° - 4° week

- General introduction to Karamba
    - Setting-up a structural model
      Line to Beam, Mesh to Shell, Material, Cross section, Load, Support
    - Post processing
      Reading the results, deformation, Internal forces, report
    - Algorithm inside Karamba
      2nd order theory, Natural vibrations, Bucking analyses, Tension-compression only
    - Stress Pattern on shell element
      Principal stress direction, Principal moment direction, iso lines on shell
    - Structural Optimization: Single and Multi-objective optimization
      Galapagos, Firefly, Octopus

5° week

- Geometry Gym
    - Export Grasshopper Model to other FEA software
      Grasshopper to GSA/SAP, Karamba to Sap
- Interoperability Grasshopper - Excel
    - Import and export data to EXCEL
      Upload CFD data set to apply to Karamba

6° week

- K2E, Kangaroo 2 Engineering
    - Set up a structural model able to perform non linear analyses
      Beam, Bar, Cable, Prestress
- Design Explorer
    - List operation on simple data
      Looking at the several operations
    - Create geometry in Grasshopper or import from Rhino
      Case study: trave reticolare tra due generiche curve (Section 2 AT)

7° week

- Q&A